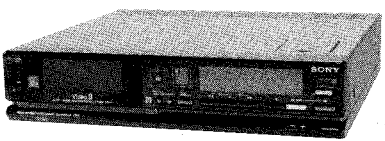
EV-A300EC/UB
RMT-409

SERVICE MANUAL

AEP Model
UK Model



August, 1985

Video 8

This manual contains the Adjustment method.

SPECIFICATIONS

System

Video recording system
Rotary two heads,
Helical scanning FM system

Audio recording system
Rotary head, FM system

Video signal
EV-A300EC
CCIR system B, G and H, PAL colour
EV-A300UB
British TV standards, PAL colour

Usable cassettes: Cassettes having the mark 8

Tape speed
SP: Approx. 20.051 mm/sec
LP: Approx. 10.058 mm/sec

Recording/playback time
SP: 90 min.
LP: 180 min.
(with Sony P5-90 cassette)

Fast forward/rewind time
Approx. 3 min. (with Sony P5-90)

Tuner section

Channel coverage
EV-A300EC
VHF E2–U10
UHF E21–68
EV-A300UB
UHF B21–68

Programming system
30 programme memories

Aerial input: 75-ohm, asymmetrical aerial socket

RF output signal: UHF channels E30/B30 to E39/B39 (variable), 75 ohms, unbalanced

Inputs and outputs

Video input: EUROCONNECTOR: 21-pin (pin 20) 1 V (p-p), 75 ohms, unbalanced, sync negative

Video output: EUROCONNETOR: 21-pin (pin 19) 1 V (p-p), 75 ohms, unbalanced, sync negative

Audio input: EUROCONNECTOR: 21-pin (pin 6) More than 10 kilohms, −6.3 dBs (0 dBs = 0.775 V rms)

Audio output: EUROCONNECTOR: 21-pin (pins 1 and 3) Load impedance less than 1 kilohms −6.3 dBs with 10 kilohms load, unbalanced

PCM stereo processor multi-connector
21-pin

Control S input: Minijack
Input impedance 47 kilohms

— Continued on next page —

8 VIDEO CASSETTE RECORDER

SONY

MICROFILM

Consumer VIDEO

Timer

Clock	Crystal lock
Time indication	24-hour cycle
Timer setting	Only for recording 4 events/3 weeks max., adjustable for any day or for all 7 days of the week

General

Power requirements
EV-A300EC
220 V ac, 50 Hz
EV-A300UB
240 V ac, 50 Hz

Power consumption
31 W

Storage temperature
−20°C to +60°C (−4°F to +140°F)

Operating temperature
−5°C to 40°C (41°F to 104°F)

Dimensions Approx. 355 × 80 × 338.7 mm (w/h/d) (14 × 3¼ × 13⅜ inches) including projecting parts and controls

Weight Approx. 6.1 kg (13 lbs 7 oz) net

Accessories supplied

75-ohm coaxial cable for TV connection (1)
Remote Commander RMT-409 with two IEC designation R6 batteries (1)
Screwdriver (1)

Whilst the information given is true at time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

OPTIONAL CONNECTING CABLES

VMC-2121CE (21-pin connector to 21-pin connector)
VMC-2106S (21-pin connector to 6 phono plugs)
VMC-2104MS (21-pin connector to 4 phono plugs)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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SECTION 1
GENERAL

1-1. PRECAUTIONS

On safety

- Before operating, check that the operating power voltage and frequency of the unit are identical with those of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the mains outlet if it is not to be used for an extended period of time. To disconnect the mains lead, pull it out by the plug. Never pull the lead itself.
- The unit is not disconnected from the mains (ac power source) as long as it is connected to the mains outlet, even if the unit itself has been turned off.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not cover the holes on the top panel.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as a microwave oven or large loudspeaker.
- Do not place any heavy object (more than 13kg, 28 lbs 10 oz) on the unit.
  And never place any object on the tuning compartment and on the top of the front panel.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.
Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

On cassette care

Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

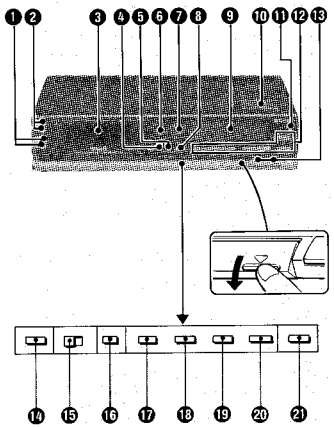
On colour broadcasting systems

This machine is designed to record and play back using the PAL colour system. Recording and playback of video sources based on other colour systems cannot be guaranteed.

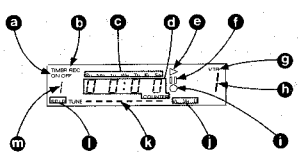
If you have any questions about this unit, contact your Sony dealer.

1-2. LOCATION AND FUNCTION OF CONTROLS

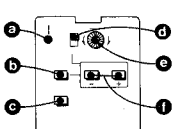
A-1



A-2



A-3



For details on the use of each control, refer to the pages indicated in the brackets.

Front panel A-1

❶❷ **▲ (eject) button and lamp [p.12]**
After turning the power on, press to open the cassette compartment.

❸ **ON/STANDBY switch and lamp**
Press to turn on the unit. The lamp will light up. Press again to turn it off.
When a cassette is inserted, the unit will be turned off after the tape has been wound up inside the cassette.

❹ **Cassette compartment [p.12]**

❺ **CLOCK/COUNTER button [p.16]**
Press to change the clock display to the tape counter.
When the unit is turned off, the display is automatically set to the clock display.

❻ **RESET button [p.16]**
Press to reset the tape counter to "0000".

❼ **QUICK TIMER button [p.19]**
Press to start the recording immediately. The recording time can be selected in 30 minute intervals, from 0:30 to 5:00 by pressing this button.

❽ **REMOTE SENSOR [p.12]**
Detects the remote control signal transmitted from the supplied Remote Commander.

❾ **TAPE RETURN button [p.16]**
Press this button in the stop mode to return the tape around the "0000" point on the counter.

❿ **Display window** A-2
The following are displayed according to the operating mode of the recorder.
ⓐ Timer turn-on/off time
ⓑ Indicates a timer recording is activated.
ⓒ Day of week
ⓓ Clock/tape counter
ⓔ Playback
ⓕ Pause
ⓖ VTR mode
ⓗ Programme number
ⓘ Recording
ⓙ Band

EV-A300EC	EV-A300UB
VL: Channels E2–4 and S1–3 VH: Channels M1–10, E5–12 and U1–10 U: Channels E21–68	U: Channels B21–68

ⓚ Tuning/tape running
ⓛ Tape speed
ⓜ Timer recording event number

⓫ **Tuning compartment** A-3 **[p.11]**
⓬ **STILL ADJ (still picture adjustment) screw [p.15]**
If the still picture seems to shake, turn this screw using the supplied screwdriver until the picture stabilizes.
⓭ **SEARCH ON/OFF button**
Press this button as the first step in presetting programmes. After presetting, press it again.
ⓒ **CLEAR button**
Press this button to clear the preset station.
ⓓ **AFT (automatic fine tuning) switch**
Normally set this switch to ON. The automatic fine tuning circuit locks in and maintains a sharp picture.
ⓔ **SHARPNESS control [p.15]**
Adjust the sharpness of the playback picture if necessary. Normally set this control at the center detent position.
ⓕ **TUNING buttons**
When the SEARCH ON/OFF button is set to ON, tune in a station to be preset with these buttons. Press "–" to tune in a station of lower frequency and "+" to tune in a station of higher frequency.
When the SEARCH ON/OFF button and the AFT switch are set to OFF, press these buttons to fine tune a station.

⓫ **TV/VTR select button [p.13]**
When your TV is equipped with the 21-pin SCART or PERI-TV connector which accepts a control signal from this recorder, use this button to select the TV or VTR mode on the TV.
To view the picture being received or recorded on the recorder, press this button so that the "VTR" indicator is displayed. (When the ▶ button is pressed, the "VTR" mode is selected automatically.)
To watch one TV programme while recording another, press this button to turn off the indicator, and select the programme on the TV.

⓬ **Tape transport buttons and switch**
◀◀ (rewind) button: Press to rewind the tape. Pressing this button during playback enables you to see a high-speed playback in reverse.
▶ (play) button: Press to play back a tape. When the ◀◀ button is pressed at the same time as this button, the tape will be automatically played back after it has been completely rewound.
▶▶ (fast-forward) button: Press to advance the tape. Pressing this button during playback enables you to see a high-speed playback.
■ (stop) button: Press to stop the tape.
❚❚/▶❚◀ (pause/still picture) button: Press to stop the tape for a moment during recording or playback. The still picture is obtained during playback. Press again to release the pause mode.
❚❚▶ (step) button: Press to view the step-by-step playback picture in the playback pause mode.
RECORD switch: Slide to the right to start recording.

⓭ **PROGRAM +/– buttons**
Press to select the number of the programme to be viewed or recorded. Press "+" for higher-numbered programmes, and "–" for lower-numbered programmes. These buttons are also used for clock and timer settings.

⓮ **REC MODE (recording mode) button [p.12]**
By pressing this button, select the recording speed: SP or LP. The playback speed is set automatically regardless of this button setting.

⓯ **INPUT SELECT switch [p.13]**
Select the programme to be recorded.
TUNER: for recording TV programmes
LINE: for recording audio and video signals from the EUROCONNECTOR

⓰ **CLOCK SET button [p.10]**
Press this button as the first step in setting the current time.

⓱ **CLEAR button [p.18]**
In the timer setting or checking mode, press this button to clear the memory of timer recording of a particular event.

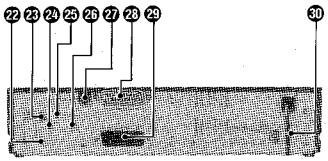
⓲ **CHECK button [p.18]**
Press to check the timer presettings.

⓳ **TIMER SET button [p.17]**
Press this button as the first step in setting timer for recording or in changing the timer presettings.

⓴ **NEXT button [p.10, 17]**
Press this button to memorize the preset item and advance to the next item to be preset in clock or timer setting mode.

㉑ **TIMER REC ON/OFF button [p.17]**
Press this button to activate the timer recording. To deactivate the timer recording, press it again.

A-4



Rear A-4

㉒ AERIAL OUT socket
Connect to the aerial input of a TV with the supplied aerial cable.

㉓ AERIAL IN socket
Connect an aerial cable here.

㉔ DX/LOCAL switch [p.11]
Normally set to DX. If the TV signal is very strong, set to LOCAL.

㉕ TEST SIGNAL switch [p.9]
Set to ON to obtain a test pattern for adjusting the TV.

㉖ RF CHANNEL screw [p.9]
If there is interference on the factory-preset channel for RF output and the output signal from this unit cannot be displayed clearly on the TV screen, adjust the screw with the supplied screwdriver.

㉗ CONTROL IN jack
Connect to the CONTROL (S) output jack of a Sony product, such as the RM-E100V video editing controller, for various systematic operations.

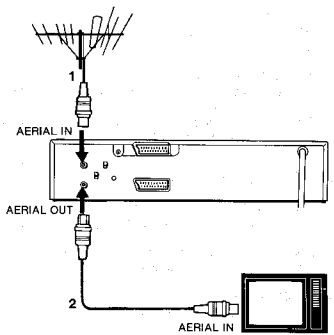
㉘ PCM PROCESSOR connector [p.20]
Connect to the multi-connector of the optional PCM-EV10E/UB PCM stereo processor. When connecting, remove the black cap.

㉙ EUROCONNECTOR (21-pin) [p.8, 20]
Connect to the 21-pin connector of a TV/monitor or another video cassette recorder, or to the audio/video inputs and outputs of these units with an appropriate connecting cable.

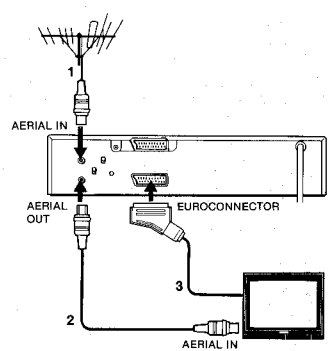
㉚ AC mains lead

1-3. CONNECTIONS

B-1



B-2



Notes
- Unplug each unit from the mains outlet before making the following connections.
- Make sure the connections are secure. A loose connection may cause a noisy picture.

Connecting a TV without video/audio inputs B-1
1 Connect the aerial cable to the AERIAL IN socket on the recorder.
2 Connect the AERIAL OUT socket on the recorder to the AERIAL IN socket on the TV using the supplied cable. Each socket accepts only one particular end of the cable.

Now the recorder is set up to intercept all signals from the aerial on their way to the TV. The recorder then passes on the signals to the TV. This is why you can record a programme while it is being shown on the TV, or while the TV is showing another programme, or even when the TV is turned off.

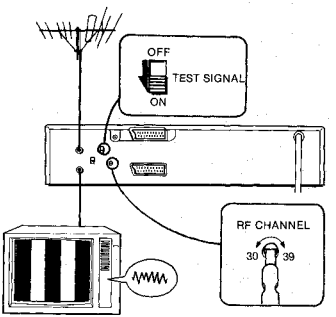
Connecting a TV/monitor equipped with video/audio inputs B-2
1 Connect the aerial cable to the AERIAL IN socket on the recorder.
2 Connect the AERIAL OUT socket on the recorder to the AERIAL IN socket on the TV using the supplied cable. Each socket accepts only one particular end of the cable.
3 Connect the EUROCONNECTOR on the recorder to the video/audio inputs (VIDEO/AUDIO IN, MULTI IN, or 21-pin SCART or PERI-TV) on the TV/monitor using an appropriate cable. This connection provides better-quality playback picture and sound.

Note: To use the Sony KX-series colour monitor, connect the recorder to the BNC-type VIDEO IN and phono-type AUDIO IN connectors on the monitor.

Connection between the AERIAL OUT socket and the colour monitor is not possible since the monitor is not equipped with a tuner. For this reason, you cannot watch a TV programme while recording another programme on the recorder.

1-4. ADJUSTING THE TV C

C



One of the television programme positions must be adjusted to receive the signal from the recorder.
Note that the adjustment is not necessary, however, when the recorder is connected to the video/audio inputs on the TV/monitor.

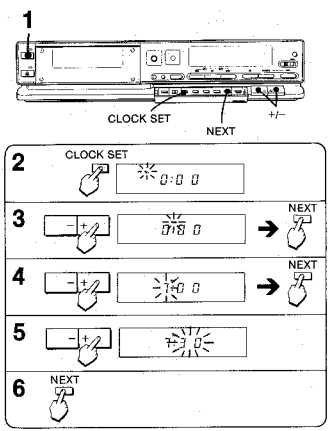
1 After making power connections, press the ON/STANDBY switch.
2 Set the TEST SIGNAL switch on the rear to ON. The test signal is transmitted on a channel between UHF channels 30 and 39.
3 Turn on the TV and select a programme position which is not being used to receive a TV station. Tune the channel until you see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the test signal.

If the test picture is free of disturbance, the TV adjustment is complete. Set the TEST SIGNAL switch to OFF.

If the test picture is not free of disturbance
1 Reset the TEST SIGNAL switch to OFF.
2 Adjust the channel of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
3 Set the TEST SIGNAL switch to ON again.
4 Slowly turn the RF CHANNEL screw on the rear of the recorder with the supplied screwdriver, until you see an undistorted test pattern on the TV screen.
5 Now the TV adjustment is complete. Reset the TEST SIGNAL switch to OFF.

1-5. SETTING THE CLOCK

D



When you connect the mains lead to a mains outlet, the clock in the display window indicates "Su 0:00" to show that it is ready to be set.

Time indication
0:00 = midnight 12:00 = noon

Day indication
Su = Sunday Mo = Monday Tu = Tuesday
We = Wednesday Th = Thursday Fr = Friday
Sa = Saturday

Example: To set for Wednesday morning at 7:35 D
1 Turn the power on.
2 Press the CLOCK SET button.
3 Set the day by pressing the + or – button and press the NEXT button.
4 Set the hour by pressing the + or – button and press the NEXT button.
5 Set the minute by pressing the + or – button.
6 With an announced time signal, press the NEXT button.

The clock now starts operating, showing the correct time. The dots of the colon alternately blink every 30 seconds.

NEXT button
Each time the NEXT button is pressed, the item to be set blinks to let you know the setting order.

+/– buttons
The + and – buttons can be pressed in two ways.

When you hold a button down, the digits will advance continuously until the button is released.

When you press and immediately release a button, the digits will advance by one.

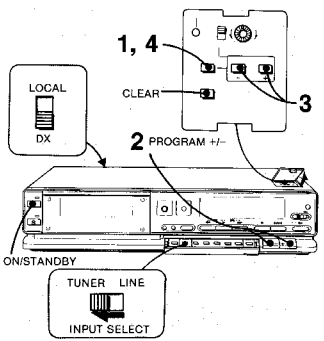
To change the actual clock setting
Press the CLOCK SET button and repeat the clock setting procedure from step 1.

Note
If you have pressed the CLOCK SET button inadvertently, press the NEXT button enough times until the dots of the colon blink.

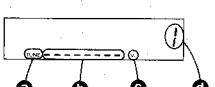
When power has been interrupted, the time indication reverts to "Su 0:00", showing that the clock must be reset.

1-6. PROGRAMMING TV STATIONS E-1

E-1



E-2



This recorder has 30 programme positions. Once you preset the programmes broadcast in your area, programme selection is simply made by pressing the + or – button on the recorder or the hand-held Remote Commander.

To start programming, turn on the recorder by pressing the ON/STANDBY switch and set the INPUT SELECT switch to TUNER.

1 Press the SEARCH ON/OFF button (ON).
The display window changes to the tuning mode. E-2

- ⓐ Shows the tuning mode.
- ⓑ Shows the approximate location of the current channel within the band.
- ⓒ Band indicator
- ⓓ Programme number

2 Press the + or – PROGRAM button on the front panel to select the programme position.
+ for a higher-numbered programme position
– for a lower-numbered programme position

3 Press the + TUNING button to locate a station with higher frequency and the – TUNING button to locate a station with lower frequency. When a station has been received, the search will stop. Press the + or – TUNING button again, until the desired station is received.

Repeat steps 2 and 3 for all the desired stations.

4 Press the SEARCH ON/OFF button to OFF so that the TUNE indicator disappears.

To cancel an unused programme

1 Select the programme to be cancelled with the + or – PROGRAM button.
2 Set the SEARCH ON/OFF button to ON.
3 Press the CLEAR button.
4 Set the SEARCH ON/OFF button to OFF.

Then the cancelled programme will be skipped when the + or – PROGRAM button, or the + or – side of the PROGRAM button on the Remote Commander is pressed. When the corresponding programme number button on the Commander is pressed, the sound of the cancelled programme will be cut off.

To fine tune a station

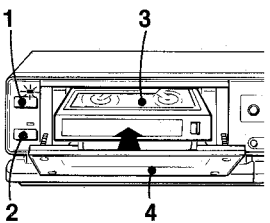
If the picture of a particular station is not acceptable, check that the SEARCH ON/OFF button is set to OFF, set the AFT switch to OFF and keep the + or – TUNING button pressed until the picture becomes clear. To view this particular station, set the AFT switch to OFF.

Notice for customers in a strong signal area

This unit has a booster to assure stable TV reception. However, in areas near TV stations, where the TV signal is very strong, the picture may be affected by the booster. If this happens, set the DX/LOCAL switch on the rear panel to LOCAL.

1-7. CASSETTE CARE

G-1



Use a video cassette having the mark 8 .
Always insert a cassette in the correct direction. Never insert it upside down.

When the cassette has been inserted into the cassette compartment, or when the ⏏ button is pressed, the lamp inside the compartment blinks and the function buttons do not work.
After the blinking stops, start the operations.

CASSETTE INSERTION G-1

1 Turn on the power.
2 Press the ⏏ button.
3 Insert the cassette with the side from which the tape is visible up and in the direction of the arrow on the cassette.
4 Press the cassette holder.

CASSETTE EJECTION

1 Turn on the power.
2 Press the ⏏ button.
After the blinking of the lamp stops, the cassette holder opens front.
3 Remove the cassette and press the cassette holder.

G-2

THE TAB ON THE CASSETTE G-2

(The photo is a Sony cassette.)

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased. To avoid erasing a recording, slide the tab out to cover the opening.
When the tab is out, a recording cannot be made. To re-record on the cassette, slide the tab in.

Note
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, if the tab is out or in, etc.

RECORDING TIME

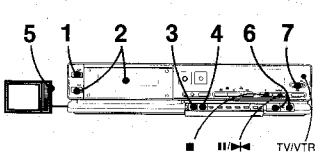
Two recording tape speeds can be selected by the REC MODE button.
The recording time of any given cassette in the LP mode is 2 times that in the SP mode.

Cassette used	SP mode	LP mode
P5-30	30 min.	60 min.
P5-60	60 min.	120 min.
P5-90	90 min.	180 min.

The playback speed is automatically set.

1-8. RECORDING TV PROGRAMMES

H-1



1 Press the ON/STANDBY switch. The lamp on the switch will light.
2 Press the ⏏ button and insert a cassette. See page 13.
3 Select the recording tape speed, SP or LP, by pressing the REC MODE button.
4 Set the INPUT SELECT switch to TUNER.
A programme number will appear in the display window.
5 Turn on the TV/monitor.
- **If your TV is not equipped with audio/video inputs,** select the programme position adjusted for receiving signals from the recorder.
- **If the AUDIO/VIDEO IN jacks or MULTI IN connector of your TV/monitor is connected to the EURO-CONNECTOR on the recorder,** select the "VTR" mode on the TV/monitor.
- **If the SCART or PERI-TV connector of your TV/monitor is connected to the EUROCONNECTOR on the recorder,** press the TV/VTR button on the recorder so that the VTR indicator is displayed.

6 Select the programme to be recorded with the +/– PROGRAM button.
"+" for higher numbered programmes, and "–" for lower numbered programmes.
7 Slide the RECORD switch to the right.
The ○ indicator will appear in the window and recording will begin.

To stop recording, press the ■ button.

To stop recording momentarily, press the II/▶◀ button. The ▯▯ indicator will appear (and all the dots of the tape running indicator will light) in the window.
The TV programme can be seen on the screen, but the picture will not be recorded.
To resume recording, press the II/▶◀ button again.
To protect the video heads and the tape, the pause mode will be automatically released after about 7 minutes and recording will stop.

To view another TV programme while recording
- **If your TV is not equipped with audio/video inputs,** simply select the programme you want to view with the TV's programme selector.
- **If the AUDIO/VIDEO IN jacks or MULTI IN connector of your TV is connected to the EUROCONNECTOR on the recorder,** select the "TV" mode with the input selector on the TV, and then select the programme you want to view with the TV's programme selector.
- **If the SCART or PERI-TV connector of your TV is connected to the EUROCONNECTOR on the recorder,** press the TV/VTR button on the recorder so that the VTR indicator turns off, then select the programme you want to view with the TV's programme selector.

When the tape reaches the end during recording, it will be automatically rewound.

Notes
- If the safety tab of the inserted cassette is out, the cassette is automatically ejected when the RECORD switch is slid to the right.
- Recording does not begin if the tape of the cassette is at its end.

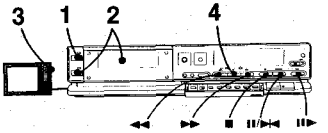
FOR SMOOTH RECORDING

Recording should always be started from the recording pause mode for smooth transitions between scenes. Proceed as follows if the recording was stopped or if you want to record on pre-recorded tape from a desired point.
1 Play back the tape to the point from which the new recording is to begin.
2 Press the II/▶◀ button to stop the tape at the desired point.
3 Set the recorder in the recording pause mode by sliding the RECORD switch to the right.
4 Press the II/▶◀ button again when you want to start recording.

Caution
Television programmes, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provision of the copyright laws.

1-9. PLAYING BACK A RECORDED TAPE [I-1]

[I-1]



1 Press ON/STANDBY switch. The lamp on the switch will light.
2 Press the ≜ button and insert a cassette. See page 13.
3 Turn on the TV/monitor.
- **If your TV is not equipped with audio/video inputs,** select the programme position adjusted for receiving signals from the recorder.
- **If the AUDIO/VIDEO IN jacks or MULTI IN connector of your TV/monitor is connected to the EURO-CONNECTOR on the recorder,** select the "VTR" mode on the TV/monitor.
- **If the SCART or PERI-TV connector of your TV/monitor is connected to the EUROCONNECTOR on the recorder,** the TV/monitor will be set to the "VTR" mode automatically.

4 Press the ▶ button. The ▷ indicator will appear in the window and playback will begin.

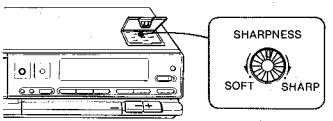
To stop playback, press the ■ button.

To rewind the tape, press the ◀◀ button.

To advance the tape rapidly, press the ▶▶ button.

When the tape reaches the end during playback, it will be automatically rewound.

I-2



Picture adjustment I-2
Turn the SHARPNESS control in the tuning compartment toward SHARP for a sharp picture, or SOFT for a soft picture.

STILL PICTURE
—To stop playback momentarily

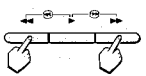
Press the ❚❚/▶◀ button during playback. The ❚❚ indicator will appear in the window.
Streaks will appear in the still picture and the sound will be cut off.
The resume playback, press the button again.
The pause mode will be automatically released after about 7 minutes and the playback will stop.

If the picture seems to shake, turn the STILL ADJ screw in the tuning compartment clockwise or counterclockwise using the supplied screwdriver until the picture stabilizes.

STEP-BY-STEP PLAYBACK
—To view the picture frame by frame

In still picture mode, press the ❚❚▶ button. Each time the button is pressed momentarily, the picture advances by one frame. If the ❚❚▶ button is kept pressed, the picture advances frame by frame continuously.
To resume normal playback, press the ❚❚/▶◀ button.

I-3

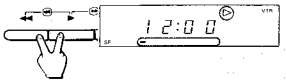


PICTURE SEARCH I-3
—To locate a particular point while viewing the picture

During playback, 1) keep pressing the ◀◀ button for reverse movement, or 2) keep pressing the ▶▶ button for forward movement. You will see the picture moving rapidly.
At the desired point, release the button. Normal playback will resume.
Streaks will appear and the sound will be cut off in picture search mode.

Notes
- The picture may be distorted in step-by-step playback and picture search modes.
- When a tape recorded in SP mode is played back in still picture or picture search mode, the picture may appear in black and white or shake depending on the TV used.
- In picture search mode, streaks appear wider with a tape recorded in SP mode than with a tape recorded in LP mode.

I-4



AUTO PLAY I-4

—To rewind the tape and play it back automatically

In stop mode, keeping the ◀◀ button pressed, press the ▶ button. After the tape is rewound to the beginning, it will be played back automatically.

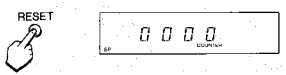
TAPE RETURN

—To rewind the tape to a particular point

1 Press the CLOCK/COUNTER button to change the display to the tape counter, if necessary.
2 During recording, press the RESET button at the point you want to locate later.
The tape counter is reset to "0000".
3 When recording or playback is finished, stop the tape and press the TAPE RETURN button.
The tape will be rewound or advance to the point where the tape counter reading is approximately "0000".

I-5

RESET



TO INDEX A RECORDED PROGRAMME USING THE TAPE COUNTER I-5

Turn on the recorder and press the CLOCK/COUNTER button to display the tape counter in the display window.
To return the display to the current time, press the CLOCK/COUNTER button again.

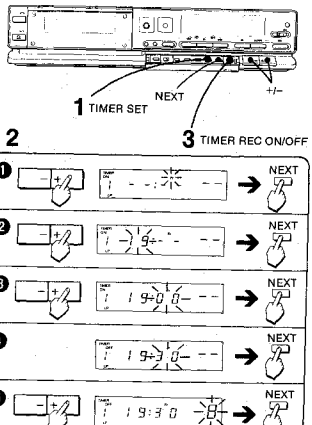
Before starting recording or playback, press the RESET button to set the counter to "0000".
By noting the counter reading at the desired point, you can easily find that point later by referring to the counter.

Notes

- The counter reading is automatically reset to zero when a cassette is newly inserted.
- While the recorder is off, the display shows the current time, regardless of the CLOCK/COUNTER button setting.
- The counter reading will be retained in the memory even after the recorder is turned off, as long as the cassette is in the cassette compartment.
- The tape counter does not operate when a blank, unrecorded tape is played.

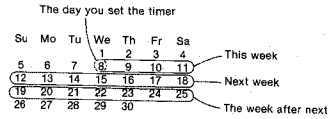
1-10. TIMER-ACTIVATED RECORDING

J



Four recording events can be set to be made all on the same day this week, next week, or the week after next, or on every day within this period, or on anytime within this period.

Possible days for recording


The day you set the timer
Su Mo Tu We Th Fr Sa
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
This week
Next week
The week after next

BEFORE SETTING THE TIMER

- Check that the clock is set to the correct current time.
- Make sure that the cassette tape is long enough to record the programmes and the safety tab on the cassette is in, and then insert the cassette.
- Select the recording tape speed, SP or LP, with the REC MODE button.
- Set the INPUT SELECT switch to TUNER.

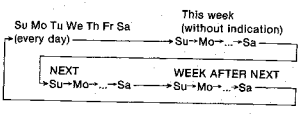
TO SET THE TIMER J

Example: To make a recording of TV programme 8 from 7:00 PM to 7:30 PM on Friday next week

1 Press the TIMER SET button.
An event number will appear, referring to the first programme you wish to record. If the timer memory has not been set for any programmes as yet, the number "1" will appear. Also, the days will flash.

2 Set the timer programme using the +/– buttons and NEXT button.
First change the blinking item by pressing the +/– buttons as required, and then press the NEXT button to memorize the setting.

❶ Set the day.
The day indication changes as follows:



❷ Set the turn-on hour.
❸ Set the turn-on minute.
❹ Set the turn-off hour and minute.
❺ Select the TV programme to be recorded.

The memorized turn-on time, turn-off time and the programme number will be displayed successively, and then the current time will appear.

To preset more events, press the TIMER SET button again to display another empty event number, and repeat all steps above.

3 Press the TIMER REC ON/OFF button.
The power will be turned off and "TIMER REC" indication will be displayed to indicate the recording standby mode.

Recording will start at the preset time and will automatically stop when the recording will be complete.

To record to the end of the tape, set the turn-off time to a time after the tape will reach the end.

Notice

- Timer setting can be made in all modes except the timer-activated recording and quick timer recording modes.
- When four events have been preset, the window shows the current time even if the TIMER SET button is pressed.
  To know the settings, press the CHECK button.
- If you press the TIMER SET button inadvertently, simply press the CLEAR button. The current time will be displayed.
- ONCE THE "TIMER REC" INDICATION HAS BEEN DISPLAYED, only the CHECK and TIMER REC ON/OFF buttons can be used.

BEFORE OR DURING TIMER RECORDING

To check the timer settings

Press the CHECK button. Each time the CHECK button is pressed, the display will change to the preset turn-on and turn-off times of each event in sequence, then to the current time.

Notes

- If no event has been preset, the display shows the current time even if the CHECK button is pressed.
- The settings can be checked in any mode. However, please note that, except during timer (including quick timer) recording, this unit receives TV programmes corresponding to the settings.

To change the settings

1 Press the TIMER REC ON/OFF button so that the "TIMER REC" indication goes off.
2 Press the CHECK button to select the setting to be changed.
3 Press the TIMER SET button.
4 Press the NEXT button as many times as required for the item to be changed to blink.
5 Change the setting with the + or – button.
6 Press the NEXT button until the current time appears.
7 Press the TIMER REC ON/OFF button to reactivate the timer recording mode.

To erase the memory of a particular event

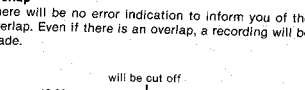
1 Press the TIMER REC ON/OFF button so that the "TIMER REC" indication goes off.
2 Press the CHECK button to select the event number to be erased.
3 Press the CLEAR button. The event will be erased.
4 If other events have been preset for recording, press the TIMER REC ON/OFF button to reactivate the timer recording mode.

To stop the on-going timer recording

Press the TIMER REC ON/OFF button so that the "TIMER REC" indication goes off. The recording stops and the unit will be turned off automatically.

When the presettings of the timer-activated recordings overlap

There will be no error indication to inform you of the overlap. Even if there is an overlap, a recording will be made.



In this case, the recording of event 2 will begin before the first recording is completely finished. Consequently, the event 1 will be cut off in the middle of its recording.

If the turn-on time of events 1 and 2 is the same, the recording of event 2 will be made.

AFTER TIMER RECORDING

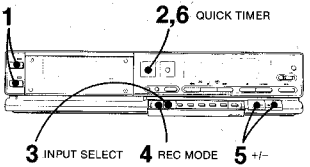
When a timer recording has been completed, the setting of the recorded event (except if it is an everyday setting) will be eliminated and all remaining events to be recorded will move up one position. For example, if you have preset 4 events, when the first timer recording is finished, the fourth position will become vacant. If the TIMER SET button is pressed, event number "4" will appear in the window.

If a power interruption occurs during timer recording (including quick timer recording)

If the clock shows "Su 0:00" and blinks, all the timer settings have been erased. Reset the clock and the timer settings.
If the power has been interrupted for less than about 30 seconds, the timer programmes are retained in the memory and on-going timer recording will resume when the power is resupplied. However, the clock should be reset as it is slow by the duration of the power interruption.

1-11. QUICK TIMER RECORDING

[K]



You can immediately start a recording and set the recording duration as well simply by pressing the QUICK TIMER button. The duration can be set for up to 5 hours by 30 minute intervals.
This function is also functional during a regular non-timer recording so that the recording stops and the unit is turned off after the preset duration.

To start recording immediately [K]

1 Turn on the power and insert a cassette.
2 Press the QUICK TIMER button.
"TIMER 0:00" will appear.
3 Set the **INPUT SELECT** switch to TUNER.
4 Set the recording speed with the REC MODE button.
5 Set the programme by pressing the + or – PROGRAM button.
(If you do not advance to the next step within 20 seconds, the unit will be turned off.)
6 Press the QUICK TIMER button until the desired recording duration is displayed. The duration indication changes as follows:

0:00 → 0:30 → 1:00 → 1:30 → ... → 5:00
↑ (30 minutes) (one hour)

The TIMER REC indication will appear and the recording will start immediately.

As the recording continues, the duration indication decreases minute by minute to 0:00, when recording stops.

To stop a quick timer recording
Press the TIMER REC ON/OFF button. The unit will be turned off as well.

During regular non-timer recording
By pressing the QUICK TIMER button, you can set the duration so that the recording stops and the unit is turned off after the preset duration.

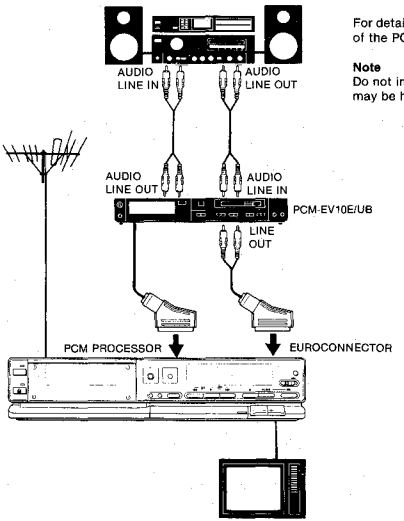
Once the quick timer recording has started
No function button except the following will be activated:
QUICK TIMER...to change the recording duration
TIMER REC ON/OFF...to interrupt the quick timer recording
▮▮/▶▮◀...to stop the quick timer recording momentarily
CHECK...to check the timer programmes preset

When the tape reaches the end during quick timer recording, recording will stop and the unit will be turned off, but the tape will not be rewound.

Note
The QUICK TIMER button cannot be activated when the TIMER REC indication is displayed.

1-12. PCM RECORDING/ PLAYBACK [M]

[M]



By connecting the optional PCM-EV10E/UB PCM stereo processor and the stereo system to this unit, PCM digital audio recording and playback, as well as audio dubbing and reception of stereo/bilingual programmes, is possible.

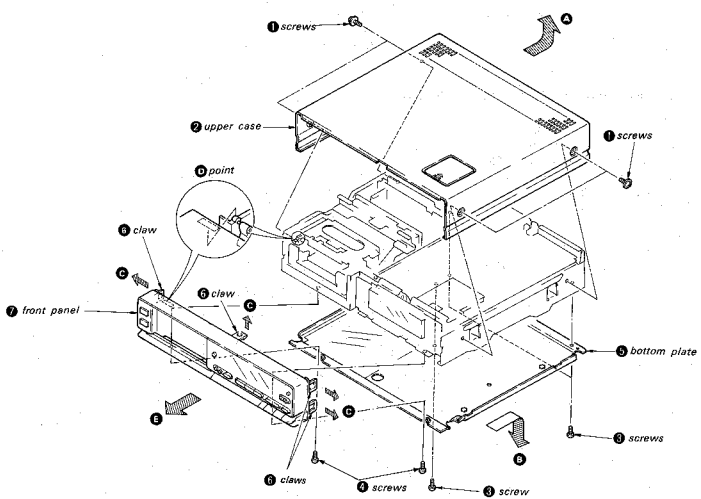
For details of operation, refer to the instruction manual of the PCM stereo processor.

Note
Do not install the unit near an AM receiver, since noise may be heard when listening to an AM programme.

SECTION 2
DISASSEMBLY

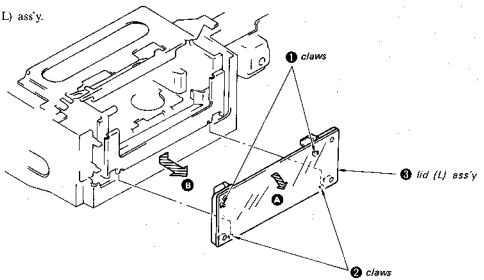
2-1. DISASSEMBLY OF CABINET

1) Remove four case screws ❶, and remove upper case ❷ in the direction shown by the arrow Ⓐ.
2) Remove three screws ❸, and loosen two screws ❹.
3) Remove bottom plate ❺ in the direction shown by the arrow Ⓑ.
4) Remove two screws ❹.
5) Remove four claws ❻ in the direction shown by the arrow Ⓒ.
6) Exercise caution at the Ⓓ point and remove front panel ❼ in the direction shown by the arrow Ⓔ.



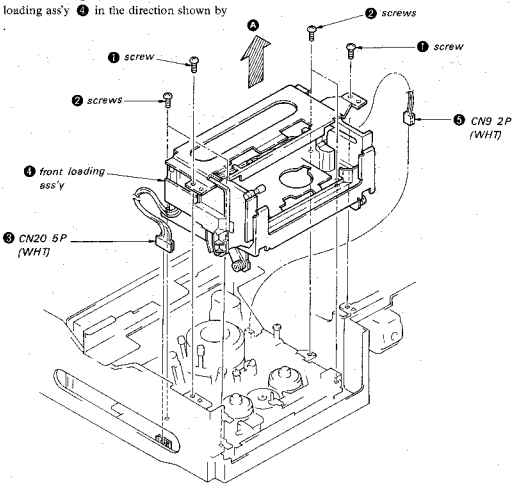
2-2. REMOVAL OF LID (L), ASS'Y

1) Remove two claws ❶ in the direction shown by the arrow Ⓐ.
2) Remove two claws ❷ in the direction shown by the arrow Ⓑ.
3) Remove lid (L) ass'y.



2-3. REMOVAL OF FRONT LOADING ASS'Y

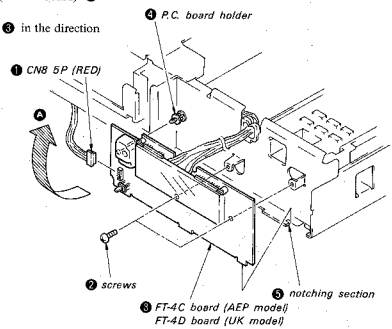
1) Remove two screws ❶.
2) Remove four screws ❷.
3) Disconnect two connectors ❸ (CN9, CN20).
4) Remove front loading ass'y ❹ in the direction shown by the arrow Ⓐ.



2-4. REMOVAL OF FT-4C BOARD (FT-4D BOARD)

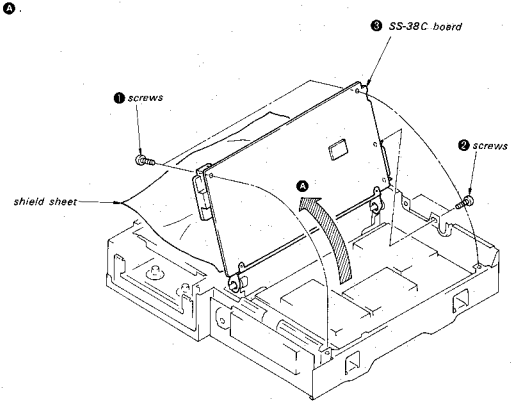
1) Disconnect connector (CN8) ❶.
2) Remove two screws ❷.
3) Remove FT-4C board (FT-4D board) ❸ from P.C. board holder.
4) Remove lower part of FT-4C board (FT-4D board) ❸ from notching section chassis ❺.
5) Remove FT-4C board (FT-4D board) ❸ in the direction shown by the arrow Ⓐ.

* *FT-4C board (AEP model only)*
FT-4D board (UK model only)



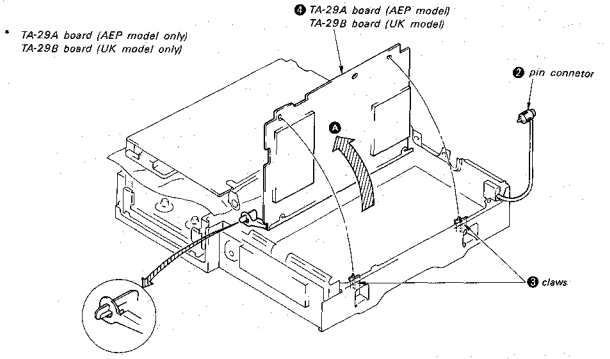
2-5. REMOVAL OF SS-38C BOARD

1) Remove two screws ❶.
2) Remove two screws ❷.
3) Remove the SS-38C board ❸ in the direction shown by the arrow Ⓐ.



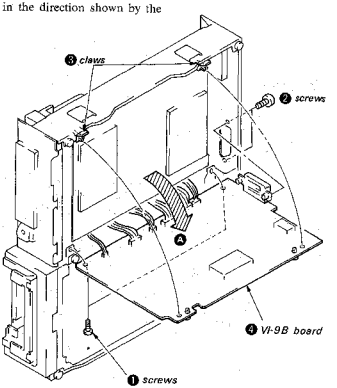
2-6. REMOVAL OF TA-29A BOARD (TA-29B BOARD)

1) Remove pin connector ❶.
2) Remove the two claws ❷ in the P.C. board holder.
3) Remove the TA-29A board (TA-29B board) ❸ in the direction shown by the arrow Ⓐ and secure it vertically.



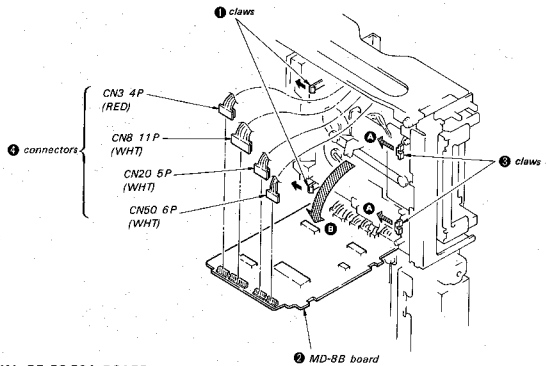
2-7. REMOVAL OF VI-9B BOARD

1) Remove two screws ❶.
2) Remove two screws ❷.
3) Remove two claws ❸ in the P.C. board holder.
4) Remove VI-9B board ❹ in the direction shown by the arrow Ⓐ.



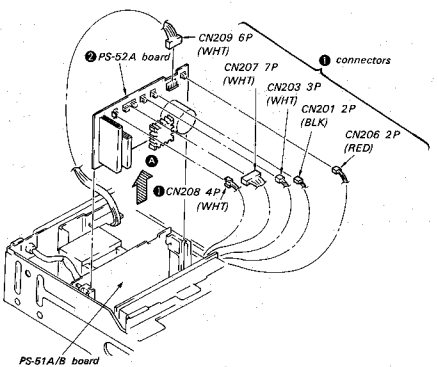
2-8. REMOVAL OF MD-8B BOARD

1) Remove two claws ❶.
2) Shift MD-8B board ❷ in the direction shown by the arrow Ⓐ and detach it from the claws.
3) Disconnect four connectors ❹ (CN3, CN8 CN20, CN50).
4) Remove MD-8B board ❷ in the direction shown by the arrow Ⓑ.



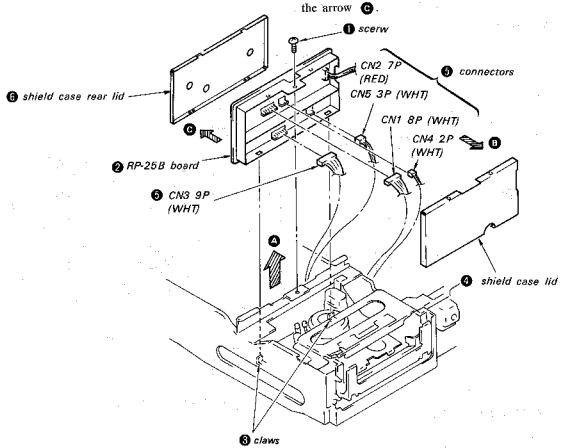
2-9. REMOVAL OF PS-52A BOARD

1) Disconnect six conectors ❶ (CN201, CN203, CN206, CN207, CN208, CN209).
2) Remove the PS-52A board ❷ in the direction shown by the arrow Ⓐ.



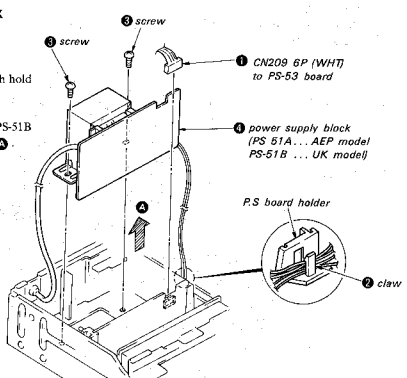
2-10. REMOVAL OF RP-25B BOARD

1) Remove screw ❶.
2) Hold RP-25B board ❷ upward in the direction shown by the arrow Ⓐ and detach it from the claw ❸.
3) Remove shield case lid ❹ in the direction shown by arrow Ⓑ.
4) Disconnect five connectors ❺ (CN1, CN2, CN3, CN4, CN5).
5) Remove shield case rear lid ❻ in the direction shown by the arrow Ⓒ.



2-11. REMOVAL OF POWER SUPPLY BLOCK PS-51A BOARD (PS-51B BOARD)

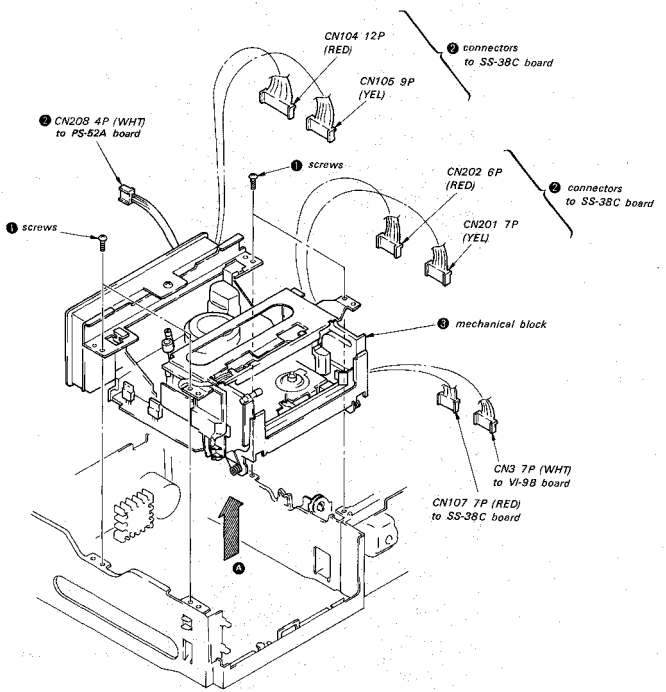
1) Disconnect connector ❶ (CN209).
2) Remove the wiring from claw ❷ of PS board which hold down the wiring.
3) Remove two screws ❸.
4) Remove the power supply block ❹ PS-51A board (PS-51B board) ❹ in the direction shown by the arrow Ⓐ.



* PS-51A board (AEP model only)
PS-51B board (UK model only)

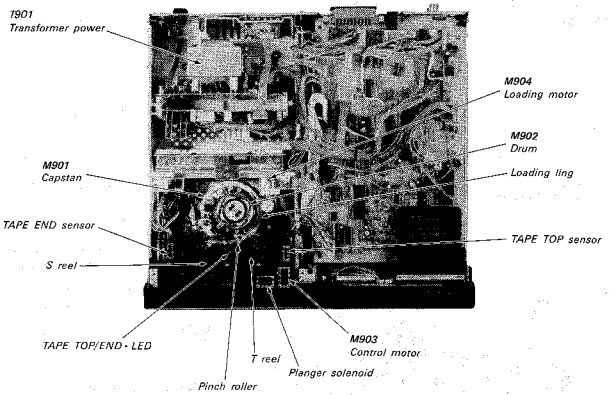
2-12. REMOVAL OF MECHANICAL BLOCK

1) Remove four screws ❶.
2) Disconnect seven connectors ❷ (CN3, CN104, CN105, CN107, CN201, CN202, CN208).
3) Remove mechanical block ❸ in the direction shown by the arrow Ⓐ.

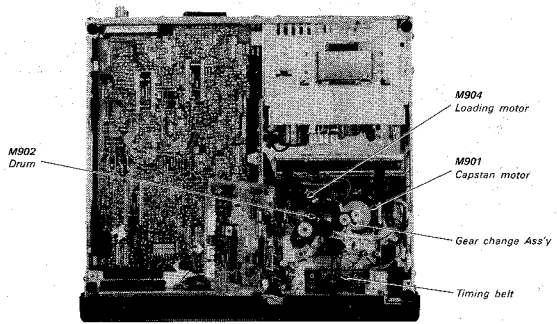


2-13. INTERNAL VIEWS

—Top side—

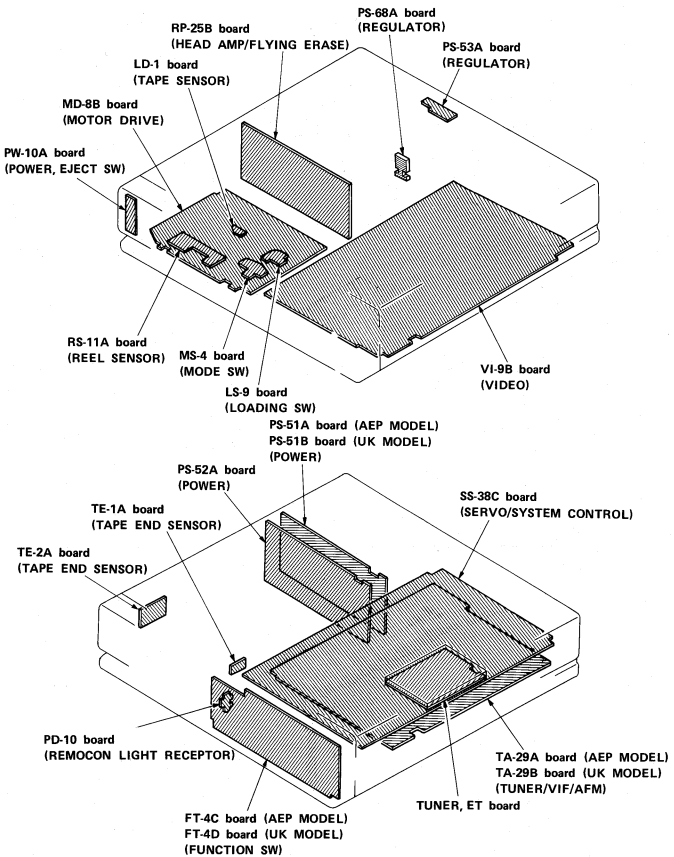


—Bottom side—

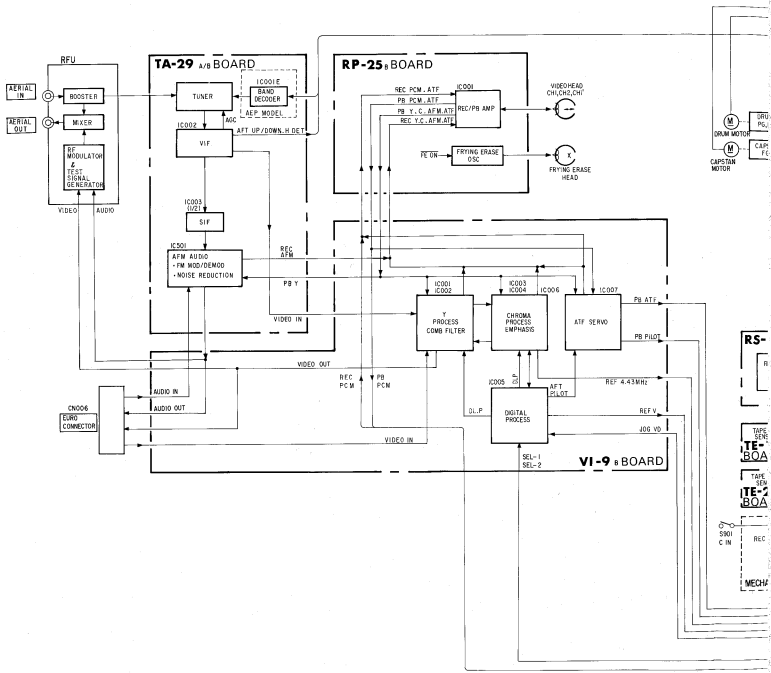


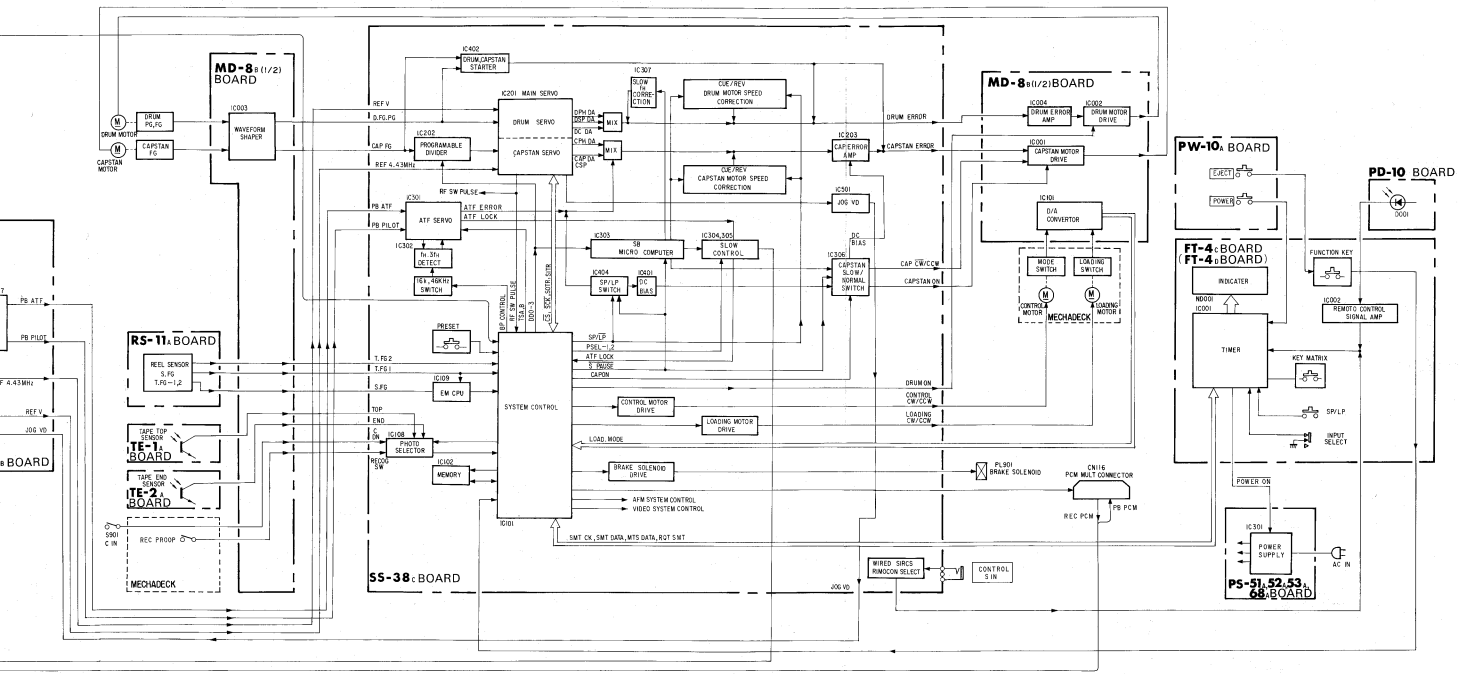
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

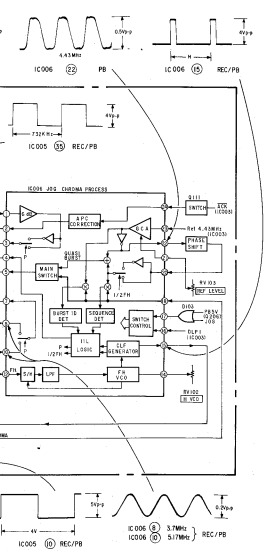


3-2. OVERALL BLOCK DIAGRAM

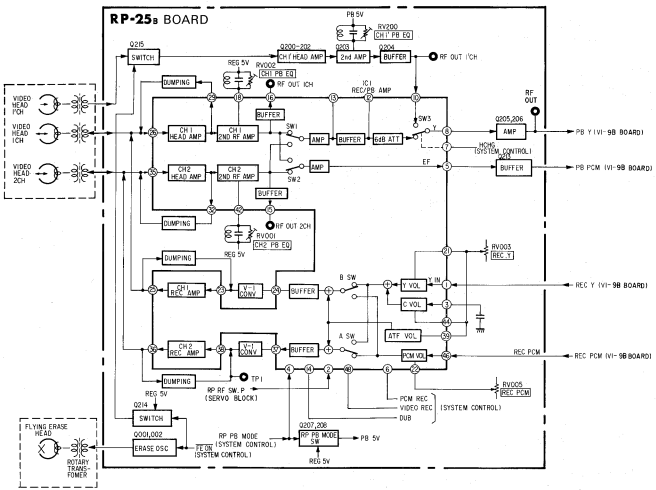



MD-8B(1/2) BOARD
DRUM MOTOR
CAPSTAN MOTOR
DRUM PG,FG
CAPSTAN FG
IC003
WAVEFORM SHAPER
REF V
D.FG,PG
CAP FG
REF 4.43MHz
IC202
PROGRAMABLE DIVIDER
IC402
DRUM,CAPSTAN STARTER
IC201 MAIN SERVO
DRUM SERVO
CAPSTAN SERVO
DPH DA
DSP DA
MIX
DC DA
CPH DA
CSP DA
IC307
SLOW CONNECTION
CUE/REV DRUM MOTOR SPEED CORRECTION
CUE/REV CAPSTAN MOTOR SPEED CORRECTION
DRUM ERROR
CAPSTAN ERROR
IC203
CAP.ERROR AMP
IC501
JOG VD
RF SW PULSE
PB ATF
PB PILOT
IC301
ATF SERVO
ATF ERROR
ATF LOCK
IC302
fo.3fo DETECT
TG1,4.8KHz SWITCH
IC303
SB MICRO COMPUTER
IC304,505
SLOW CONTROL
IC404
SP/LP SWITCH
IC401
DC BIAS
IC306
CAPSTAN SLOW/NORMAL SWITCH
DC BIAS
CAP CW/CCW
CAPSTAN ON
RF CONTROL
RF SW PULSE
TG1,8
ECS, SYS.CONTROL
PRESET
SP/LP
PSEL
ATF LOCK
S.PAUSE
CAPON
RS-11A BOARD
REEL SENSOR
S.FG
T.FG-1,2
T.FG2
T.FG1
S.FG
IC109
EM CPU
TOP
END
S IN
IC108
PHOTO SELECTOR
RECOG SW
IC102
MEMORY
TAPE TOP SENSOR
TE-1A BOARD
TAPE END SENSOR
TE-2A BOARD
S901 C IN
REC PROOF
MECHADECK
SYSTEM CONTROL
IC101
CONTROL MOTOR DRIVE
LOADING MOTOR DRIVE
LOAD MODE
BRAKE SOLENOID DRIVE
AFM SYSTEM CONTROL
VIDEO SYSTEM CONTROL
SMT CK, SMT DATA, MTS DATA, ROT SMT
SS-38C BOARD
MD-8B(1/2)BOARD
IC004
DRUM ERROR AMP
IC002
DRUM MOTOR DRIVE
IC001
CAPSTAN MOTOR DRIVE
IC101
D/A CONVERTOR
MODE SWITCH
LOADING SWITCH
CONTROL MOTOR
LOADING MOTOR
MECHADECK
PL901 BRAKE SOLENOID
CN116 PCM MULT CONNECTOR
REC PCM
PB PCM
WIRED SIRCS RIMOCON SELECT
CONTROL S IN
JOG VD
PW-10A BOARD
EJECT
POWER
PD-10 BOARD
D001
FT-4C BOARD
(FT-4D BOARD)
INDICATER
ND001
IC001
TIMER
FUNCTION KEY
IC002
REMOTE CONTROL SIGNAL AMP
KEY MATRIX
SP/LP
INPUT SELECT
POWER ON
IC301
POWER SUPPLY
AC IN
PS-51,52,53,68 BOARD

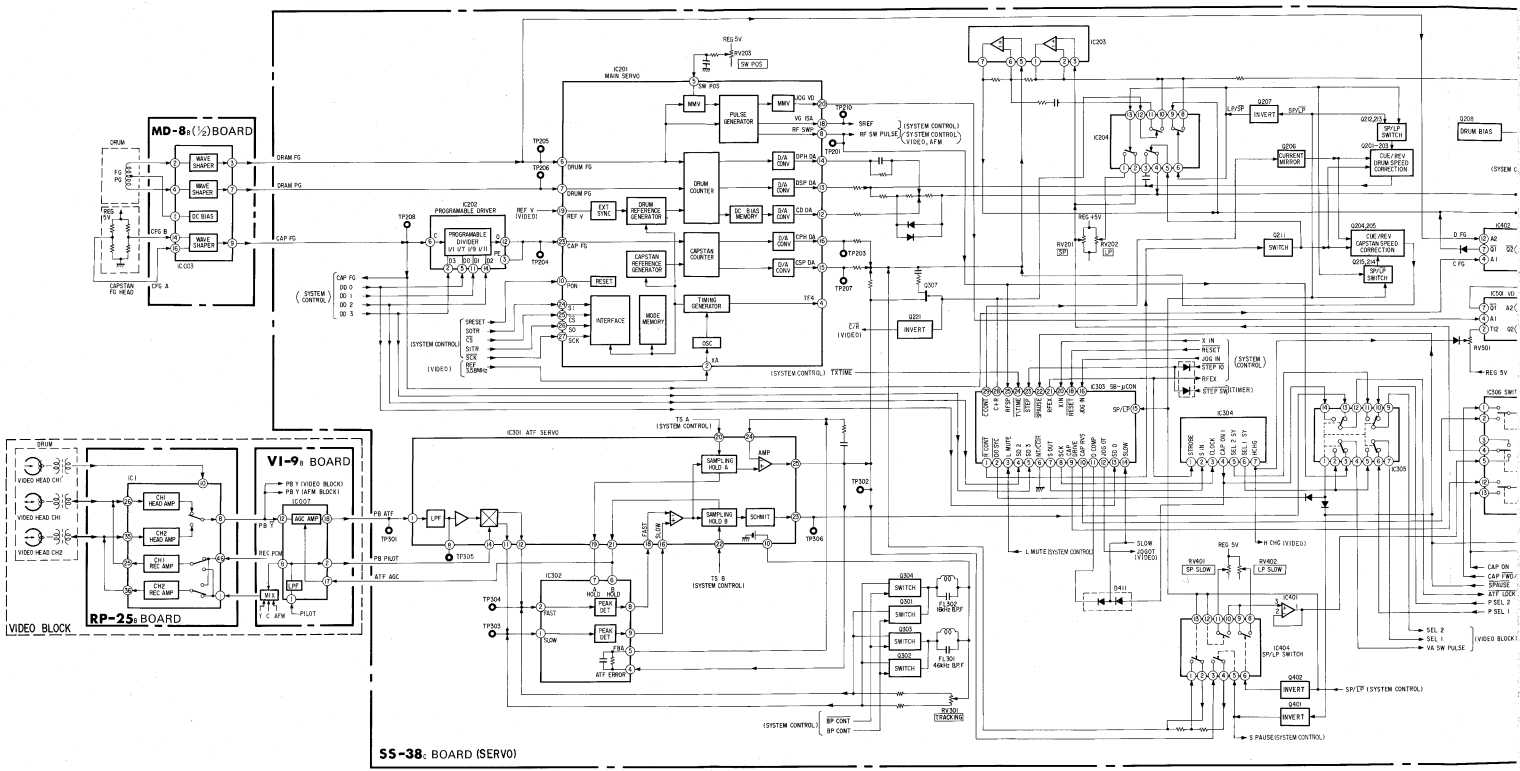
3-3. VIDEO BLOCK DIAGRAM (1)

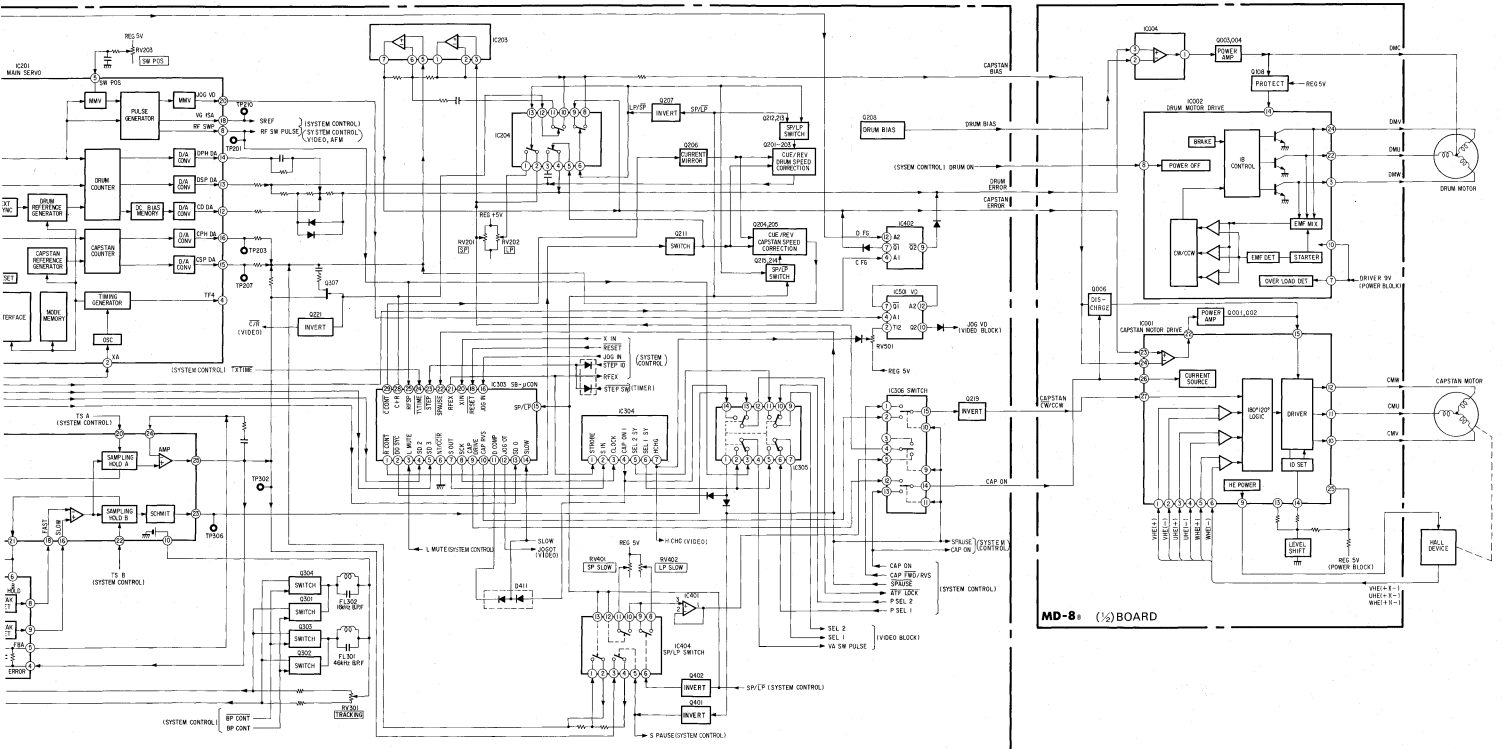


3-4. VIDEO BLOCK DIAGRAM (2)



3-5. SERVO BLOCK DIAGRAM




MD-8 (½)BOARD
IC201 MAIN SERVO
REG 5V
RV203
SW POS
PULSE GENERATOR
MMV
JOG VD
VG FG
RF SW PULSE
SREF
(SYSTEM CONTROL) (SYSTEM CONTROL) VIDEO, AFM
DRUM COUNTER
DRUM REFERENCE GENERATOR
DC BIAS MEMORY
D/A CONV
DPH DA
DSP DA
CD DA
CPH DA
CSP DA
CAPSTAN COUNTER
CAPSTAN REFERENCE GENERATOR
TIMING GENERATOR
MODE MEMORY
OSC
TP201
TP203
TP207
TP4
C7B (VIDEO)
Q221 INVERT
Q207 INVERT
SP/LP
SP/LP SWITCH
Q206 CURRENT MIRROR
CUE/REV DRUM SPEED CORRECTION
RV201 SP
RV202 LP
REG 5V
Q211 SWITCH
Q204,205 CUE/REV CAPSTAN SPEED CORRECTION
Q215,216 SP/LP SWITCH
IC402
D FG
C FG
IC59 I/O
JOG VD (VIDEO BLOCK)
RV501
REG 5V
IC306 SWITCH
Q219 INVERT
CAP ON
SPAUSE (SYSTEM CONTROL)
CAP ON
C&P ON
CAP FWD/RVS
SPAUSE
ATF LOCK
P SEL 2
P SEL 1
(SYSTEM CONTROL)
SEL 2
SEL 1
VA SW PULSE
(VIDEO BLOCK)
IC303 SB-μCON
IC304
IC305
X IN
RESET
JOG IN
STEP IO
RFEX
STEP SW
(TIMER)
(SYSTEM CONTROL)
SP/CP
H CHC (VIDEO)
SLOW (VIDEO)
L MUTE (SYSTEM CONTROL)
RV401 SP SLOW
RV402 LP SLOW
D411
IC401
IC404 SP/LP SWITCH
Q408 INVERT
Q401 INVERT
SP/CP (SYSTEM CONTROL)
S PAUSE (SYSTEM CONTROL)
TS A (SYSTEM CONTROL)
TS B (SYSTEM CONTROL)
SAMPLING HOLD A
SAMPLING HOLD B
SCHMIT
AMP
TP302
TP306
Q304 SWITCH
Q301 SWITCH
Q303 SWITCH
Q302 SWITCH
FL302 4MHz BPF
FL301 4MHz BPF
RV301 TRACKING
BP CONT
BP CONT
(SYSTEM CONTROL)
CAPSTAN BIAS
DRUM BIAS
Q208 DRUM BIAS
(SYSTEM CONTROL) DRUM ON
DRUM ERROR
CAPSTAN ERROR
CAPSTAN CW/CCW
IC304
Q003,004 POWER AMP
Q108 PROTECT
REG 5V
IC002 DRUM MOTOR DRIVE
BRAKE
POWER OFF
IR CONTROL
EMF MIX
CW/CCW
EMF DET
STARTER
OVER LOAD DET
DRIVER 9V (POWER BLOCK)
DMC
DMV
DMU
DMW
DRUM MOTOR
Q006 DIS-CHARGE
IC001 CAPSTAN MOTOR DRIVE
POWER AMP
Q001,002
CURRENT SOURCE
180°/120° LOGIC
DRIVER
IO SET
HE POWER
LEVEL SHIFT
REG 5V (POWER BLOCK)
HALL DEVICE
CAPSTAN MOTOR
CMW
CMU
CMV
VHE(+)-(-)
UHE(+)-(-)
WHE(+)-(-)

3-6. SYSTEM CONTROL CIRCUIT AND RP AMP BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
AF REC	O	IC101 46pin	L	L	L	L	L	L	L	L	L	L	L	H	L
FEON	O	IC101 47pin	H	H	L	H	H	H	H	H	H	H	H	H	H
RP PB MODE	O	IC101 48pin	H	H	L	H	H	H	H	H	H	H	H	H	H
VIDEO REC	O	IC101 49pin	L	L	H	L	L	L	L	L	L	L	L	L	L

3-7. SYSTEM CONTROL CIRCUIT AND VIDEO BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
VIDEO MUTE	O	IC101 43pin	L	L	L	L	L	L	L	L	L	L	L	L	L
JOG	O	IC101 44pin	L	L	L	L	L	H	H	H	L	L	L	L	H
VIDEO PB	O	IC101 45pin	L	H	L	L	L	H	H	H	L	L	L	H	H
SP/LP	O	IC101 38pin	Depending on SP/LP SW	Result of automatic discrimination	Depending on SP/LP SW which is activated immediately before.	H	H	Holds PB mode which has been activated immediately before.	←	←	Depending on SP/LP SW which is activated immediately before.	H	H	Holds PB mode which has been activated immediately before.	←
SRESET	O	IC101 28pin	L	L	L	L	L	L	L	L	L	L	L	L	L

3-8. SYSTEM CONTROL CIRCUIT AND FEATURE BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
RQT SF	O	IC101 57pin	*1												
MACK	I	IC101 75pin													
SO	O	Q116 collector													
Si	I	Q150 emitter													
SFCK	I	Q106 emitter													

***1 Serial data transport control signal and data signal of system control microcomputer and feature microcomputer**

3-9. SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	C
SEL 1	O	IC101 41pin	H	*1	*1	H	H	
SEL 2	O	IC101 42pin	H	*1	*1	H	H	
SRESET	O	IC101 28pin	L	L	L	L	L	
TSA	O	IC101 40pin	L	*1	L	L	L	
TSB	O	IC101 39pin	L	*1	L	L	L	
ATFLOCK	I	IC101 3pin	←					
CAP ON	O	IC101 35pin	L	H	H	H	H	
CAP FWD/RVS	O	IC101 36pin	L	L	L	L	H	
DRM ON	O	IC101 37pin	L	H	H	H	H	
S PAUSE	O	IC101 4pin	H	H	H	H	H	
DD 0	O	IC101 5pin	H	H	H	H	H	
DD 1	O	IC101 6pin	L	L	L	H	L	
DD2	O	IC101 7pin	L	L	L	L	L	
DD3	O	IC101 8pin	L	L	L	H	H	
CAP FG32	I	IC101 67pin	Unprovided	Provided	Provided	Provided	Provided	Pr
CS	O	IC101 27pin						
SO	O	Q116 collector	*3					
SI	I	Q118 collector						
SCK	O	Q117 collector						
IRQ	I	IC101 66pin	Unprovided	Provided	Provided	Provided	Provided	Pr
RF SW P	I	IC101 69pin	Unprovided	Provided	Provided	Provided	Provided	Pr
SP/LP	O	IC101 38pin	Depending on SP/LP SW	Result of automatic discrimination	Depending on SP/LP SW which is activated immediately before.	H	H	Hold which activ been immed before
STEP IO	O	IC101 29pin	H	H	H	H	H	

ADING	EJECT	DUB	DUB PAUSE
L	L	H	L
H	H	H	H
H	H	H	H
L	L	L	L

ADING	EJECT	DUB	DUB PAUSE
L	L	L	L
L	L	L	H
L	L	H	H
H	H	Holds PB mode which has been activated immediately before.	←
L	L	L	L

ADING	EJECT	DUB	DUB PAUSE

gnal and data signal of system
ture microcomputer

SIGNAL	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
SEL 1	O	IC101 41pin	H	*1	*1	H	H	*1	*1	H	H	H	H	*1	H
SEL 2	O	IC101 42pin	H	*1	*1	H	H	*1	*1	*1	H	H	H	*1	*1
SRESET	O	IC101 28pin	L	L	L	L	L	L	L	L	L	L	L	L	L
TSA	O	IC101 40pin	L	*1	L	L	L	L	L	L	L	L	L	*1	L
TSB	O	IC101 39pin	L	*1	L	L	L	L	L	*1	L	L	L	L	*1
ATFLOCK	I	IC101 3pin	←					*2							→
CAP ON	O	IC101 35pin	L	H	H	H	H	H	H	H	L	H	H	H	H
CAP FWD/RVS	O	IC101 36pin	L	L	L	L	H	L	H	L	L	H	L	L	L
DRM ON	O	IC101 37pin	L	H	H	H	H	H	H	H	H	H	H	H	H
S PAUSE	O	IC101 4pin	H	H	H	H	H	H	H	L	H	H	H	H	L
DD 0	O	IC101 5pin	H	H	H	H	H	H	H	H	H	H	H	H	H
DD 1	O	IC101 6pin	L	L	L	H	L	L	H	L	L	L	H	L	L
DD2	O	IC101 7pin	L	L	L	L	L	L	H	L	L	L	H	L	L
DD3	O	IC101 8pin	L	L	L	H	H	H	L	L	L	L	H	L	L
CAP FG32	I	IC101 67pin	Unprovided	Provided	Provided	Provided	Provided	Provided	Provided	Unprovided	Unprovided	Provided	Provided	Provided	Unprovided
CS	O	IC101 27pin	*3												
SO	O	Q116 collector													
SI	I	Q118 collector													
SCK	O	Q117 collector													
IRQ	I	IC101 66pin	Unprovided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided
RF SW P	I	IC101 69pin	Unprovided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided	Provided
SP/LP	O	IC101 38pin	Depending on SP/LP SW	Result of automatic discrimination	Depending on SP/LP SW which is activated immediately before	H	H	Holds PB mode which has been activated immediately before.	←	←	Depending on SP/LP SW which is activated immediately before.	H	H	Holds PB mode which has been activated immediately before.	←
STEP IO	O	IC101 29pin	H	H	H	H	H	H	H	H	H	H	H	H	H

*1 Changes in accordance with ATF sequence

*2 Changes in accordance with ATF tracking

*3 Serial digital input/output control signal and data signal against digital servo.

*4 At rise up/rise up and tape top/end of interruption input of RF SW pulses, pulse of "L" active is input.

3-10. SYSTEM CONTROL CIRCUIT AND MECHANISM BLOCK INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
C DOWN	I	IC108 5pin	L	L	L	L	L	L	L	L	L	L	L	L	L
TAPE TOP	I	IC108 3pin	←					*1							→
TAPE END	I	IC108 6pin	←					*2							→
REC PROOF	I	IC108 2pin	←					*3							→
LOAD CW	O	IC101 23pin	L	L	L	L	L	L	L	L	L	H	L	L	L
LOAD CCW	O	IC101 24pin	L	L	L	L	L	L	L	L	L	L	H	L	L
CONT CW	O	IC101 21pin	L	L	L	L	L	L	L	L	L	L	L	L	L
CONT CCW	O	IC101 22pin	L	L	L	L	L	L	L	L	L	L	L	L	L
UNBRAKE START	O	IC101 25pin	H	H	H	H	H	H	H	H	H	H	H	H	H
UNBRAKE HOLD	O	IC101 26pin	H	L	L	L	L	L	L	L	L	L	L	L	L

*1 "H" at tape top
*2 "H" at tape end
*3 "H" at recording prohibit

3-11. SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT INTERFACE

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
REC MUTE	O	IC101 52pin	H	H	L	H	H	H	H	H	H	H	H	H	H
LINE MUTE	O	IC101 53pin	L	L	L	L	L	H	H	H	L	L	L	L	L
AUDIO PB	O	IC101 54pin	H	L	H	H	H	L	L	L	H	H	H	H	H

3-12. SYSTEM CONTROL CIRCUIT AND TUNER BLOCK INTERF

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF
UP	I	IC101 72pin				
DOWN	I	IC101 74pin	*1			
$\overline{\text{HDET}}$	I	IC101 70pin				
AMUTE	O	IC101 1pin	L	L	L	L
BAND 1	O	IC101 56pin	*2			
BAND 2	O	IC101 55pin				
CLK	O	IC101 76pin				
C 1	O	IC101 77pin				
C 2	O	IC101 78pin	*3			
C 3	O	IC101 79pin				
I/O	I/O	IC101 80pin				

3-13. SYSTEM CONTROL CIRCUIT AND TIMER BLOCK INTERF

SIGNAL \ MODE	I/O	Pin No.	STOP	PB	REC	FF
RQTMTS	I	IC108 10pin				
RQTSMT	O	IC101 58pin				
SMTDATA	O	IC101 63pin	*1			
TRDATA	I	Q105 emitter				
$\overline{\text{SMTCK}}$	O	Q104 collector				

	LOADING	EJECT	DUB	DUB PAUSE
	L	L	L	L
				→
				→
				→
	H	L	L	L
	L	H	L	L
	L	L	L	L
	L	L	L	L
	H	H	H	H
	L	L	L	L

*1 "H" at tape top
*2 "H" at tape end
*3 "H" at recording prohibit

	LOADING	EJECT	DUB	DUB PAUSE
	H	H	H	H
	L	L	L	L
	H	H	H	H

3-12. SYSTEM CONTROL CIRCUIT AND TUNER BLOCK INTERFACE

SIGNAL	MODE I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
UP	I	IC101 72pin	*1												
DOWN	I	IC101 74pin													
$\overline{HDET}$	I	IC101 70pin													
AMUTE	O	IC101 1pin	L	L	L	L	L	L	L	L	L	L	L	L	L
BAND 1	O	IC101 56pin	*2												
BAND 2	O	IC101 55pin													
CLK	O	IC101 76pin	*3												
C 1	O	IC101 77pin													
C 2	O	IC101 78pin													
C 3	O	IC101 79pin													
I/O	I/O	IC101 80pin													

*1 Receiving condition during tuner selecting station
*2 Band output of tuner
*3 Write in/read out control signal and data signal of non-volatile memory for tuner

3-13. SYSTEM CONTROL CIRCUIT AND TIMER BLOCK INTERFACE

SIGNAL	MODE I/O	Pin No.	STOP	PB	REC	FF	REW	CUE	REV	PB PAUSE	REC PAUSE	LOADING	EJECT	DUB	DUB PAUSE
RQTMTS	I	IC108 10pin	*1												
RQTSMT	O	IC101 58pin													
SMTDATA	O	IC101 63pin													
TRDATA	I	Q105 emitter													
$\overline{SMTCK}$	O	Q104 collector													

*1 Serial data transport control signal and data signal of system control microcomputer and timer microcomputer

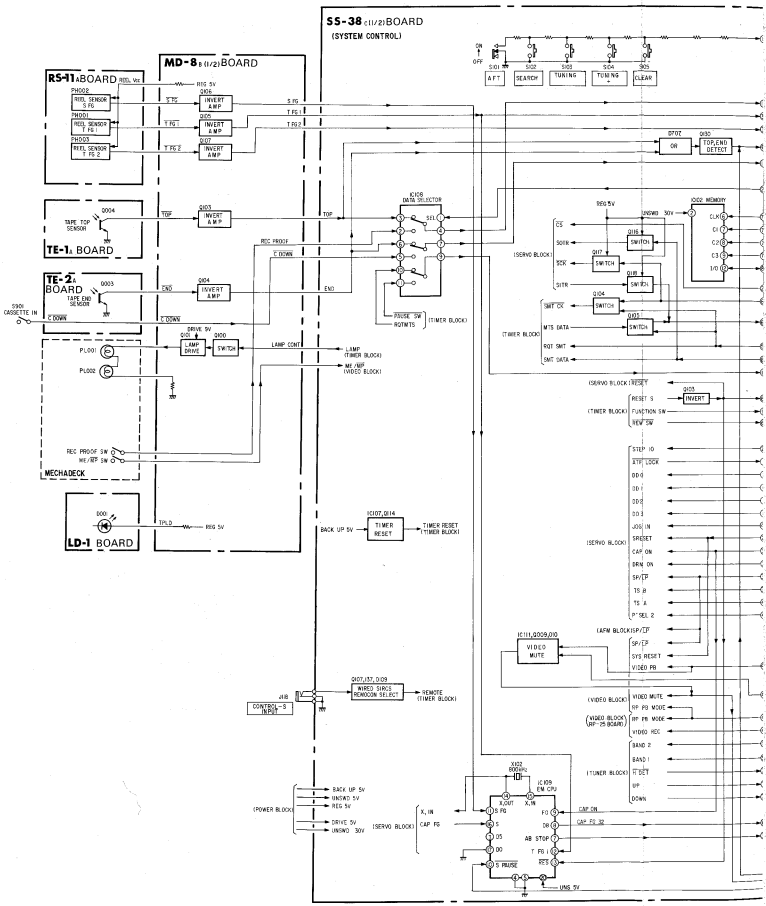
3-14. OPERATION OF CAPSTAN SERVO

	REC	PB
CSPDA (IC201 ⑮)	Capstan speed error	Capstan speed error
CPHDA (IC201 ⑯)	Capstan phase error	Fix at 2.5V DC
ATF ERROR (IC301 ㉕)	Fix at 2.5V DC	ATF error

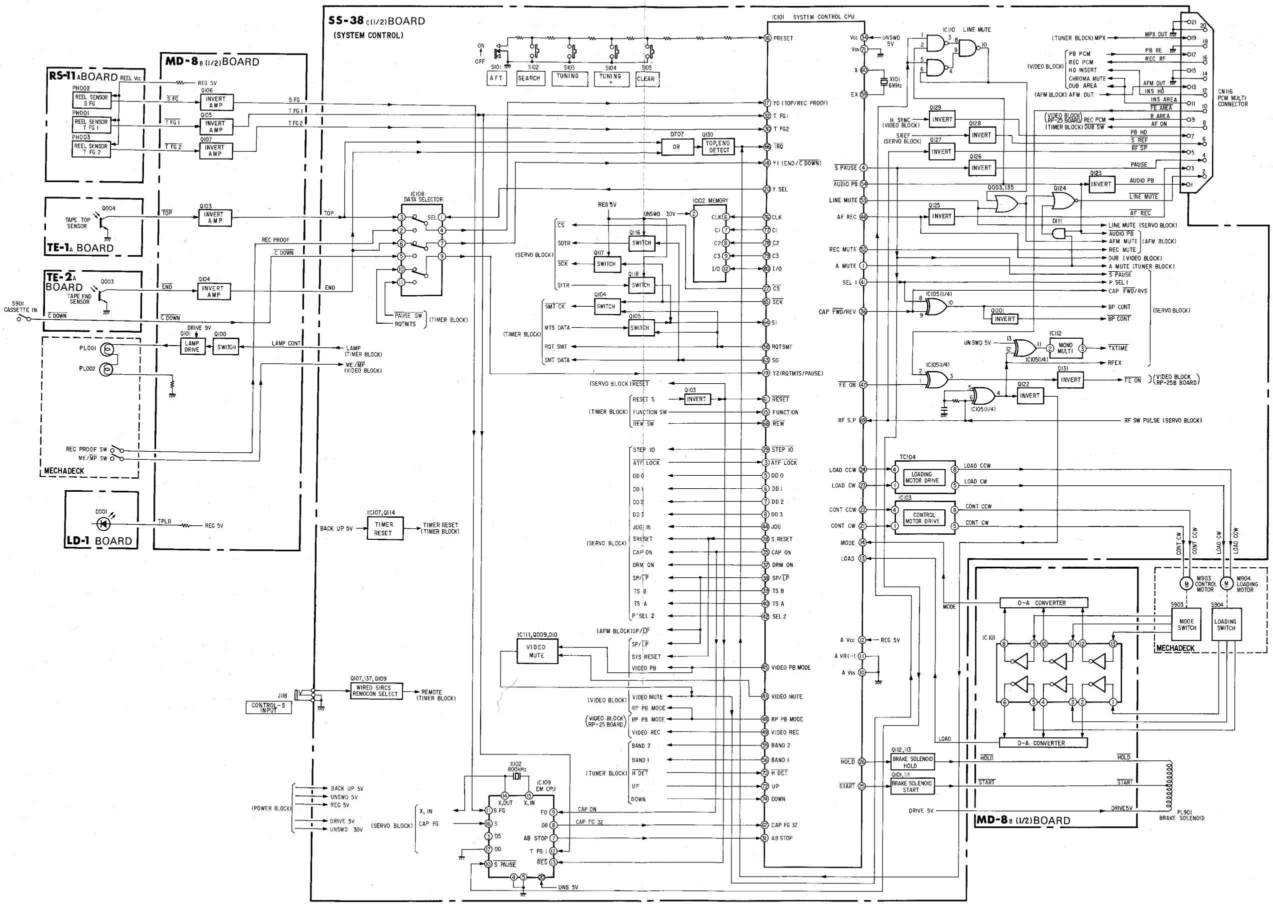
3-15. OPERATION OF CAPSTAN SPEED SELECTOR (IC202) (SS-38C BOARD)

MODE / SIGNAL	SP			FF/REW
	FWD	CUE	REV	
C FG (Hz) (IC202⑥)	1340	12059	9378	
CAP FG (Hz)(IC202 ⑫)	1340	1340	1340	
DD 1 (IC202 ⑪)	L	L	H	H
DD 2 (IC202⑭)	L	L	H	H
DD 3 (IC202②)	L	H	L	H
CFG/CAP FG	1/1	1/9	1/7	1/11

3-16. SYSTEM CONTROL BLOCK DIAGRAM

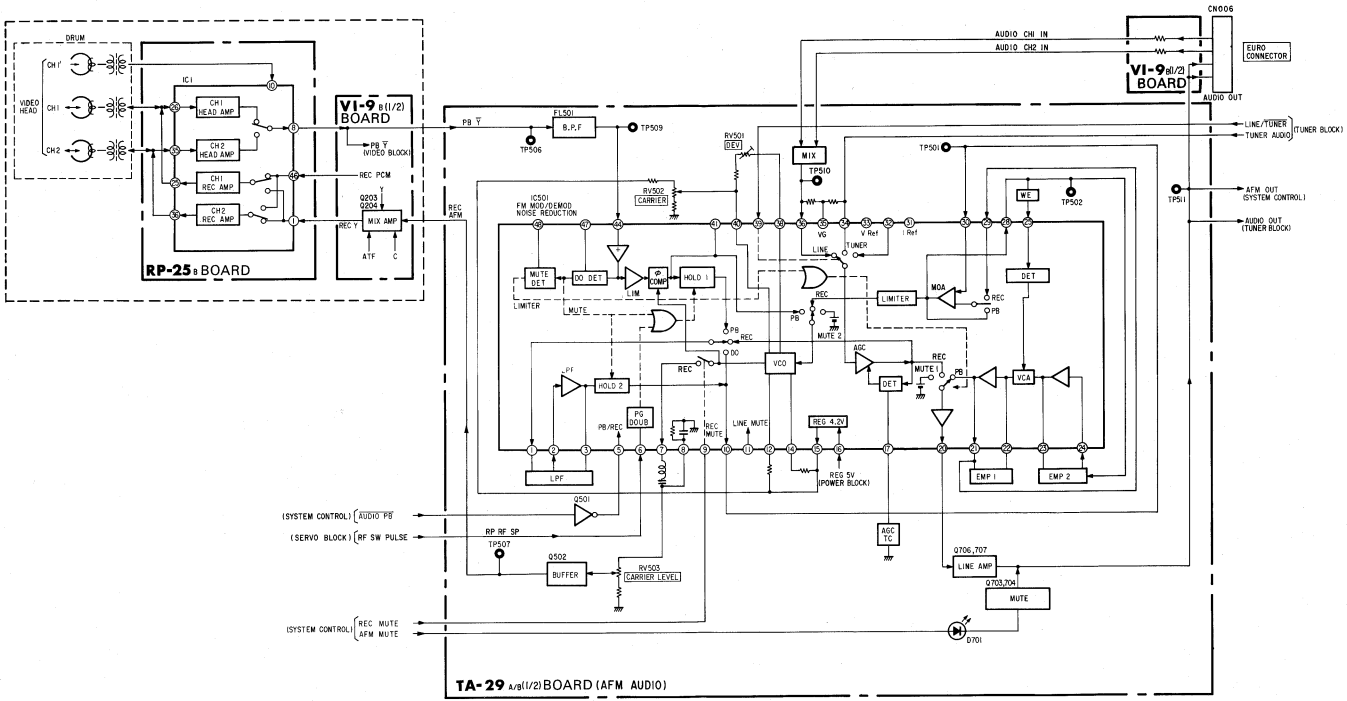


3-16. SYSTEM CONTROL BLOCK DIAGRAM

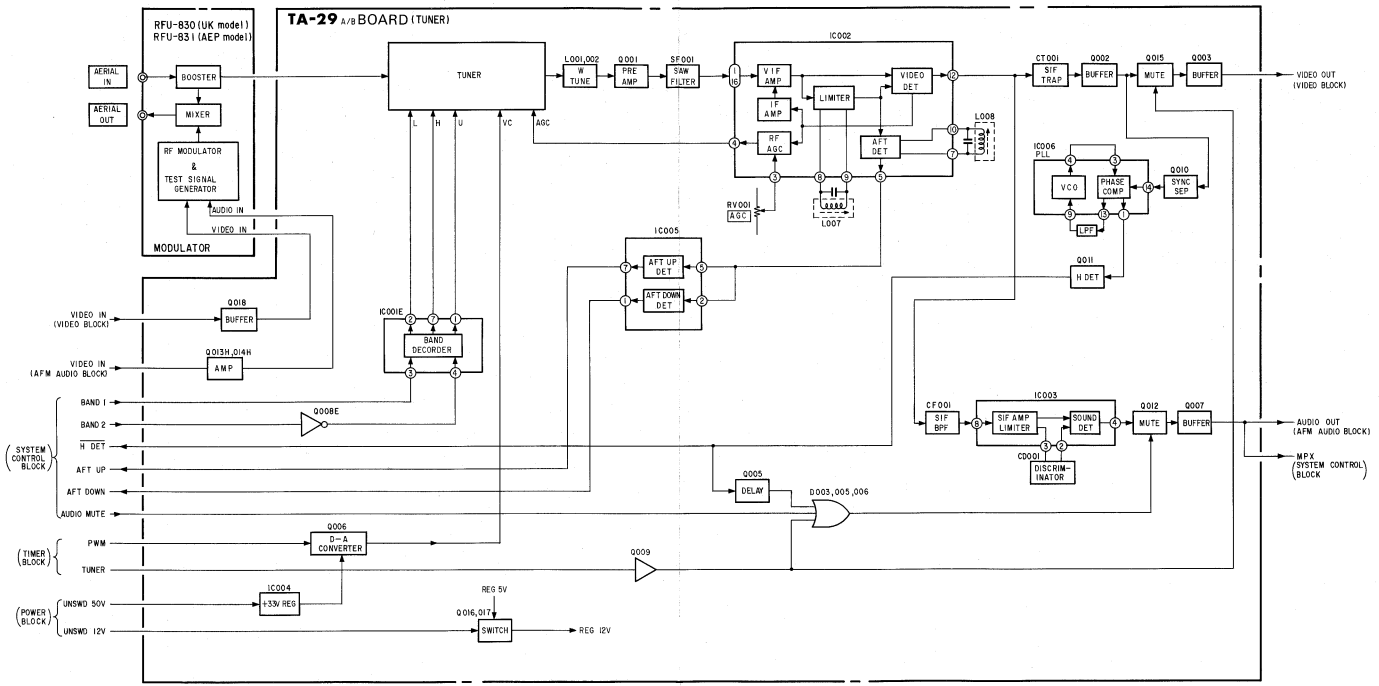


SS-38 C(1/2) BOARD
(SYSTEM CONTROL)
MD-8 B (1/2) BOARD
RS-11 A BOARD
REEL Vcc
REG 5V
PH002
REEL SENSOR S FG
PH001
REEL SENSOR T FG 1
PH003
REEL SENSOR T FG 2
Q106
INVERT AMP
Q105
INVERT AMP
Q107
INVERT AMP
S FG
T FG 1
T FG 2
TE-1 A BOARD
Q004
TAPE TOP SENSOR
TOP
Q103
INVERT AMP
TE-2 A BOARD
Q003
TAPE END SENSOR
END
Q104
INVERT AMP
S901
CASSETTE IN
C DOWN
REC PROOF
DRIVE 9V
Q101
LAMP DRIVE
Q100
SWITCH
LAMP CONT
LAMP (TIMER BLOCK)
ME/MP (VIDEO BLOCK)
PL001
PL002
REC PROOF SW
ME/MP SW
MECHADECK
LD-1 BOARD
D001
TPLD
IC108
DATA SELECTOR
SEL
PAUSE SW
RQTMTS
(TIMER BLOCK)
ON
OFF
S101
AFT
S102
SEARCH
S103
TUNING −
S104
TUNING +
S105
CLEAR
D707
OR
Q130
TOP, END DETECT
REG 5V
UNSWD 30V
IC102 MEMORY
CLK
C1
C2
C3
I/O
(SERVO BLOCK)
CS
SOTR
SCK
SITR
Q116
SWITCH
Q117
SWITCH
Q118
SWITCH
Q104
SWITCH
Q105
SWITCH
(TIMER BLOCK)
SMT CK
MTS DATA
RQT SMT
SMT DATA
(SERVO BLOCK) RESET
RESET S
Q103
INVERT
(TIMER BLOCK)
FUNCTION SW
REW SW
STEP 10
ATF LOCK
DD 0
DD 1
DD 2
DD 3
JOG IN
SRESET
CAP ON
DRM ON
SP/LP
TS B
TS A
P'SEL 2
(AFM BLOCK) SP/LP
SP/LP
SYS RESET
VIDEO PB
IC111, Q009, 010
VIDEO MUTE
(VIDEO BLOCK)
VIDEO MUTE
RP PB MODE
(VIDEO BLOCK RP-25 BOARD)
RP PB MODE
VIDEO REC
(TUNER BLOCK)
BAND 2
BAND 1
H DET
UP
DOWN
IC107, Q114
BACK UP 5V
TIMER RESET
TIMER RESET (TIMER BLOCK)
Q107, 137, D109
WIRED SIRCS REMOCON SELECT
REMOTE (TIMER BLOCK)
J118
CONTROL-S INPUT
(POWER BLOCK)
BACK UP 5V
UNSWD 5V
REG 5V
DRIVE 5V
UNSWD 30V
(SERVO BLOCK)
X, IN
CAP FG
X102
800kHz
IC109
EM CPU
X, OUT
X, IN
S FG
S
D5
D0
S PAUSE
F0
D8
AB STOP
T FG 1
RES
CAP ON
CAP FG 32
UNS 5V
IC101 SYSTEM CONTROL CPU
PRESET
Y0 (TOP/REC PROOF)
T FG1
T FG2
IRQ
Y1 (END/C DOWN)
Y SEL
CLK
C1
C2
C3
I/O
CS
SCK
SI
RQTSMT
S0
Y2 (RQTMTS/PAUSE)
RESET
FUNCTION
REW
STEP 10
ATF LOCK
DD 0
DD 1
DD 2
DD 3
JOG
S RESET
CAP ON
DRM ON
SP/LP
TS B
TS A
SEL 2
VIDEO PB MODE
VIDEO MUTE
RP PB MODE
VIDEO REC
BAND 2
BAND 1
H DET
UP
DOWN
CAP FG 32
AB STOP
Vcc
Vss
UNSWD 5V
X
EX
X101
6MHz
S PAUSE
AUDIO PB
LINE MUTE
AF REC
REC MUTE
A MUTE
SEL 1
CAP FWD/REV
FE ON
RF S.P
LOAD CCW
LOAD CW
CONT CCW
CONT CW
MODE
LOAD
A Vcc
REG 5V
A VR(−)
A Vss
HOLD
START
DRIVE 5V
IC110 LINE MUTE
H SYNC (VIDEO BLOCK)
Q129
INVERT
SREF (SERVO BLOCK)
Q128
INVERT
Q127
INVERT
Q126
INVERT
Q123
INVERT
Q003, 135
Q124
Q125
INVERT
D111
(TUNER BLOCK) MPX
MPX OUT
(VIDEO BLOCK)
PB PCM
REC PCM
HD INSERT
CHROMA MUTE
DUB AREA
(AFM BLOCK) AFM OUT
PB RE
REC RF
AFM OUT
INS HD
INS AREA
FE AREA
R AREA
AF ON
(VIDEO BLOCK RP-25 BOARD) REC PCM
(TIMER BLOCK) DUB SW
PB HD
S REF
RF SP
PAUSE
AUDIO PB
LINE MUTE
AF REC
CN116
PCM MULTI CONNECTOR
LINE MUTE (SERVO BLOCK)
AUDIO PB
AFM MUTE
REC MUTE
(AFM BLOCK)
DUB (VIDEO BLOCK)
A MUTE (TUNER BLOCK)
S PAUSE
P SEL 1
CAP FWD/RVS
IC105(1/4)
Q001
INVERT
BP CONT
BP CONT
(SERVO BLOCK)
UNSWD 5V
IC112
MONO MULTI
TXTIME
RFEX
IC105(1/4)
Q131
INVERT
FE ON
(VIDEO BLOCK RP-25B BOARD)
Q122
INVERT
RF SW PULSE (SERVO BLOCK)
TC104
LOADING MOTOR DRIVE
IC103
CONTROL MOTOR DRIVE
LOAD CCW
LOAD CW
CONT CCW
CONT CW
MODE
LOAD
D-A CONVERTER
IC101
D-A CONVERTER
M903
CONTROL MOTOR
M904
LOADING MOTOR
S903
MODE SWITCH
S904
LOADING SWITCH
MECHADECK
Q112, 113
BRAKE SOLENOID HOLD
Q101, 111
BRAKE SOLENOID START
HOLD
START
DRIVE 5V
PL901
BRAKE SOLENOID
MD-8 B (1/2) BOARD

3-17. TUNER/AUDIO BLOCK DIAGRAM (1)

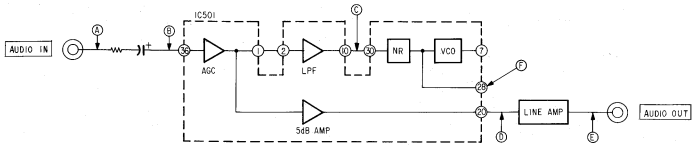


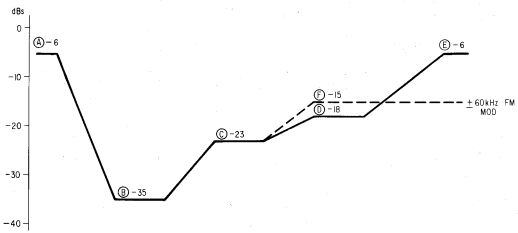
3-18. TUNER/AUDIO BLOCK DIAGRAM (2)



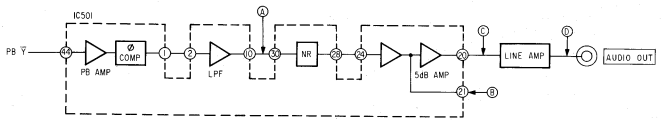
3-19. AUDIO LEVEL DIAGRAM

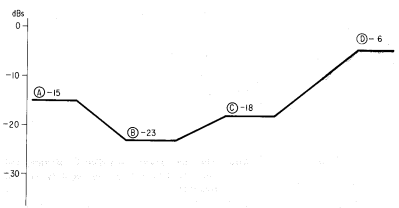
REC



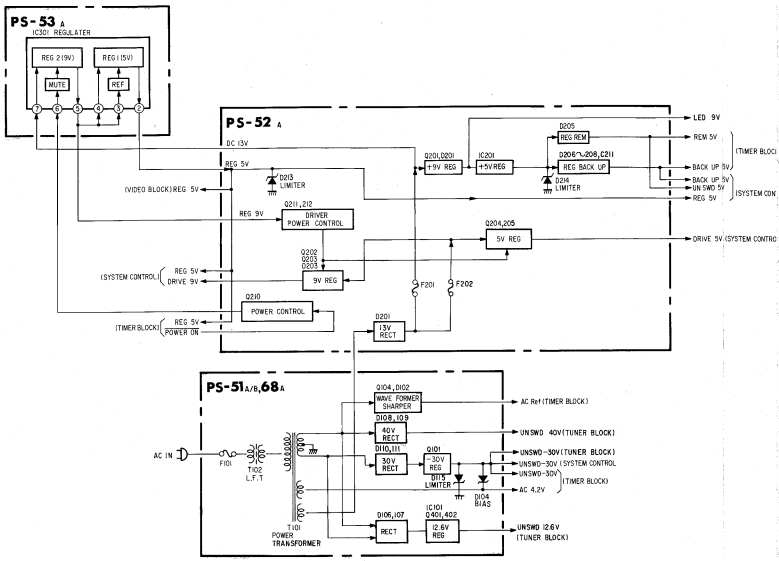


PB



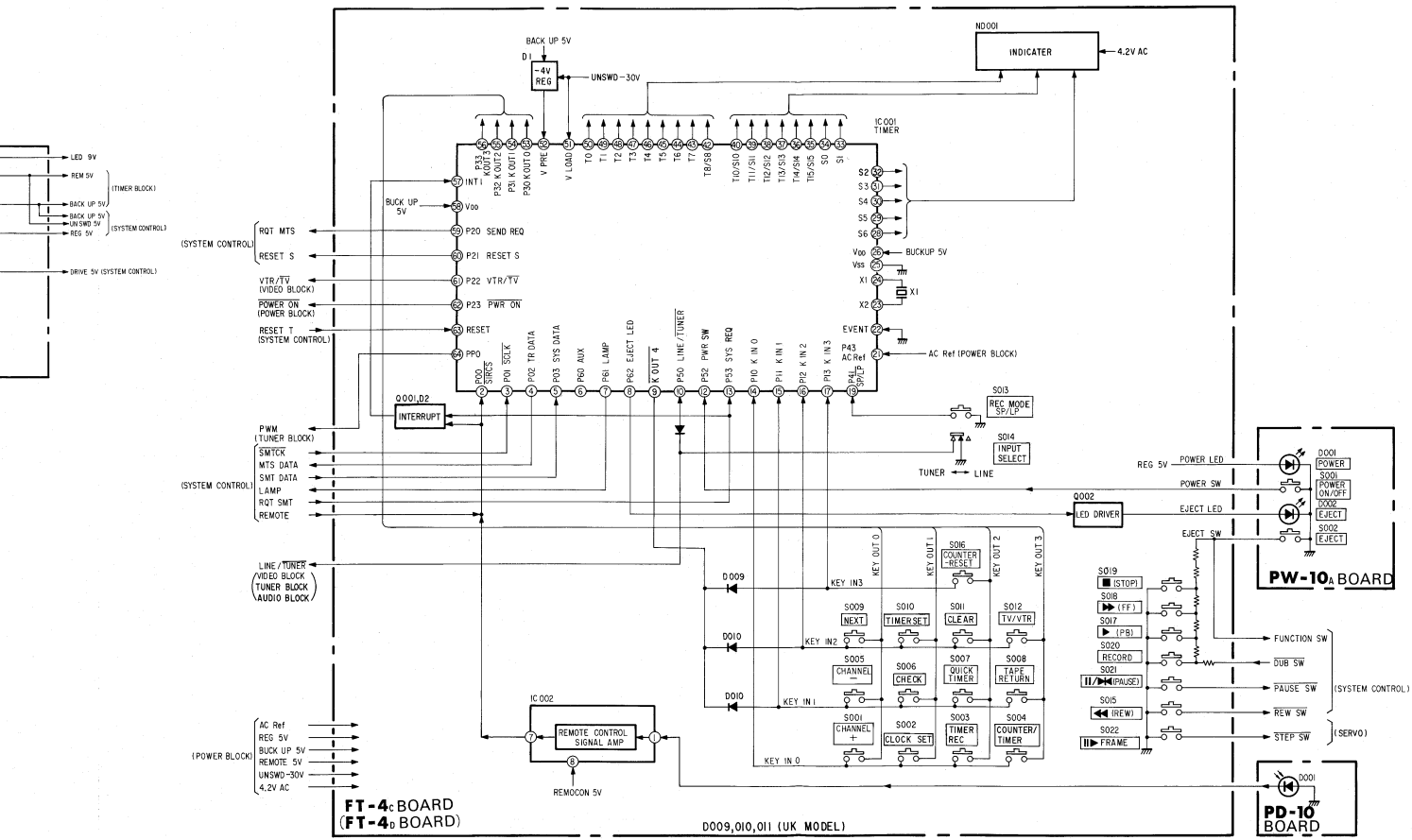


3-20. POWER BLOCK DIAGRAM

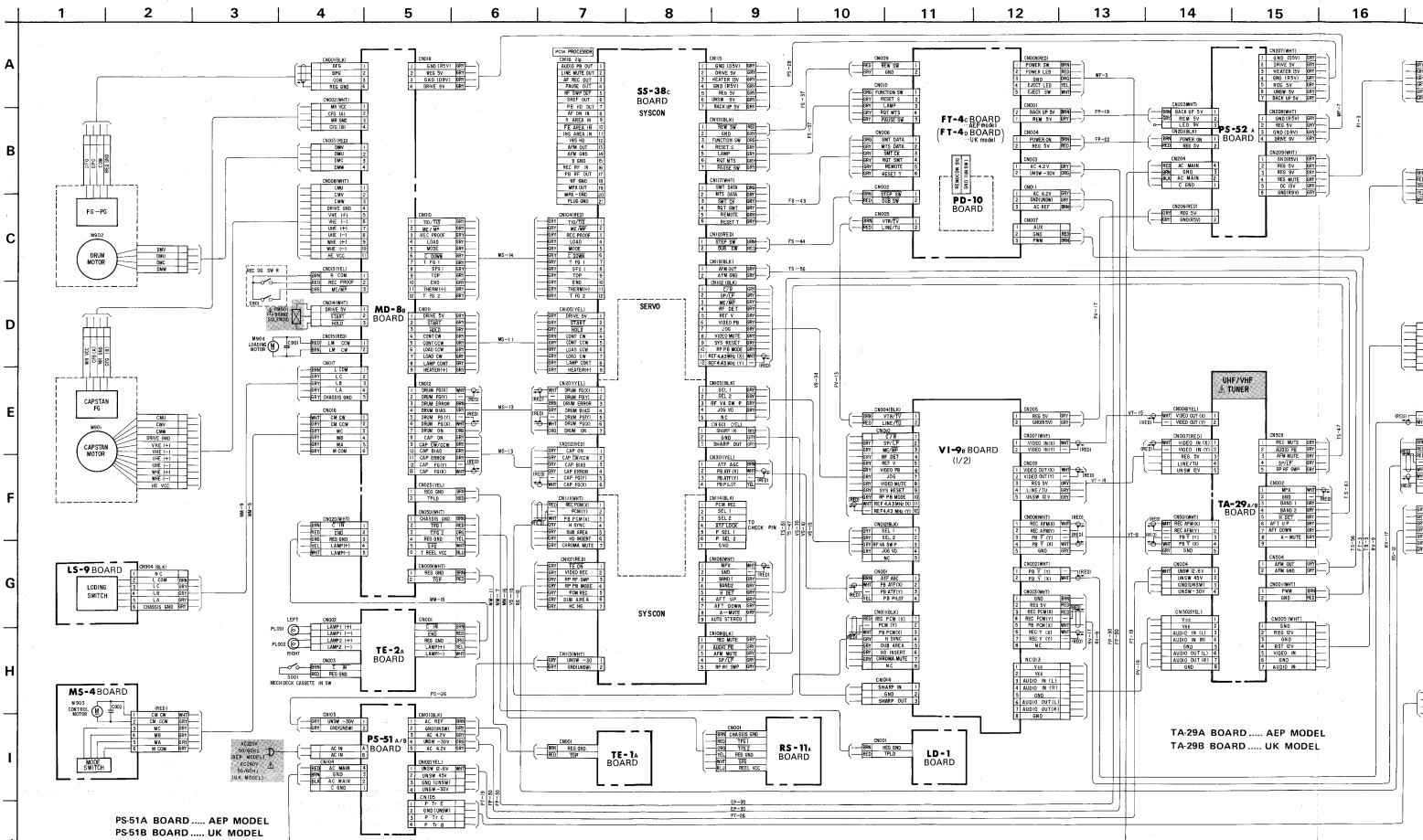


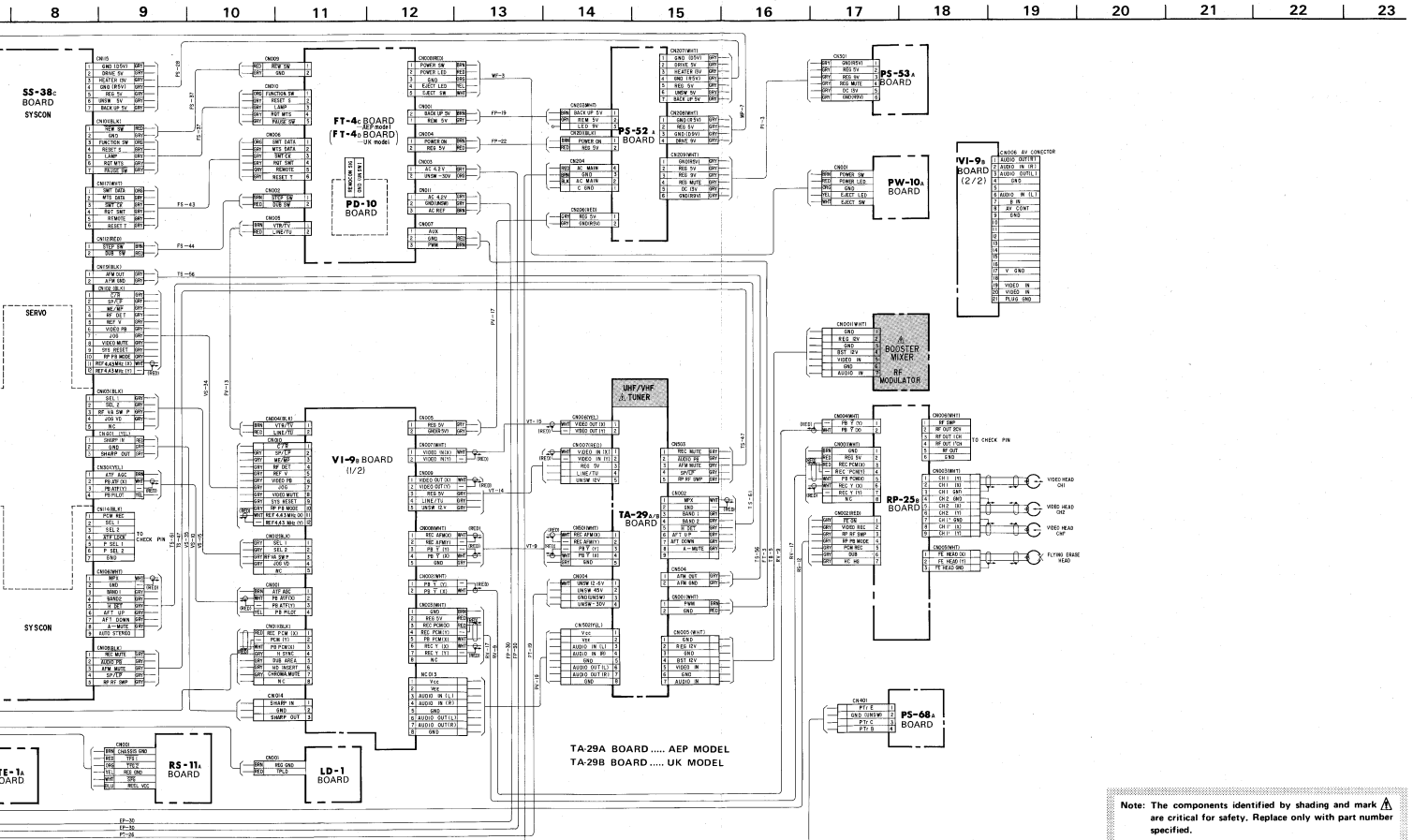
3-21. T

3-21. TIMER BLOCK DIAGRAM



4-1. FRAME SCHEMATIC DIAGRAM





Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

4-2. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

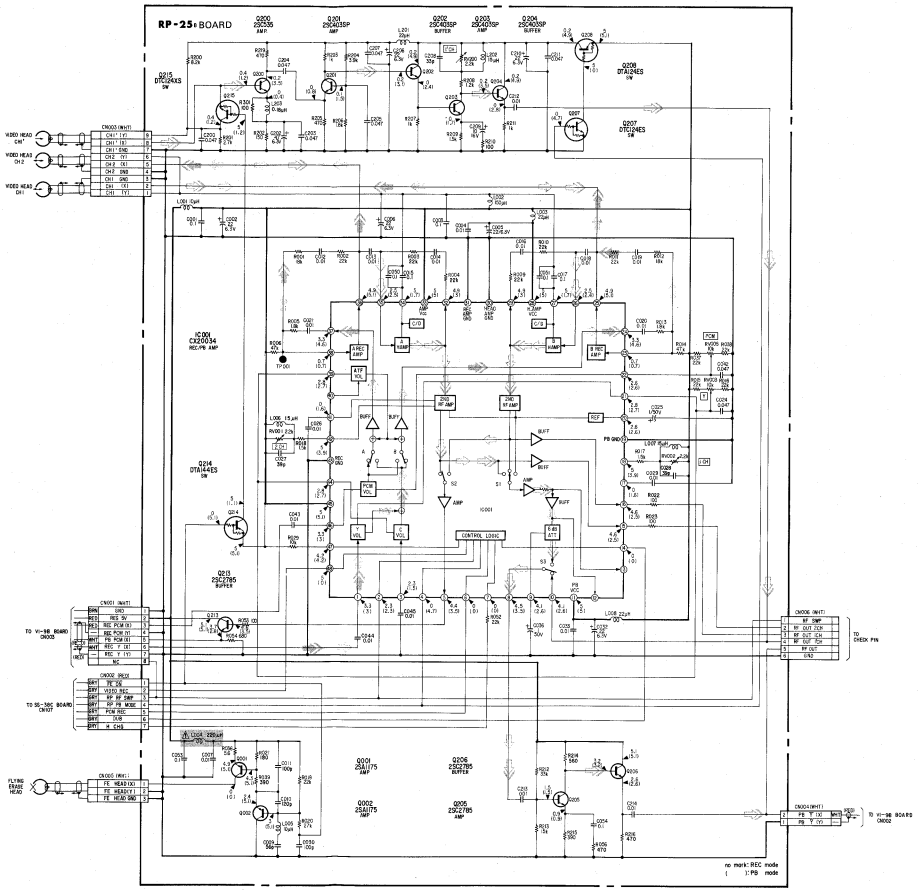
When indicating parts by reference number, please include the board name.

Signal path

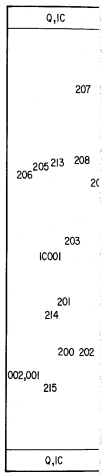
: REC Y/C Signal
: PB Y/C Signal
: REC CHROMA Signal
: PB CHROMA Signal

RP-25B (HEAD AMP/FLYING ERASE) SCHEMATIC DIAGRAM

–Ref. No. RP-25B BOARD : 3000 series–

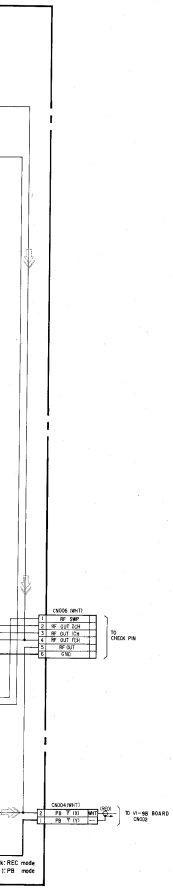


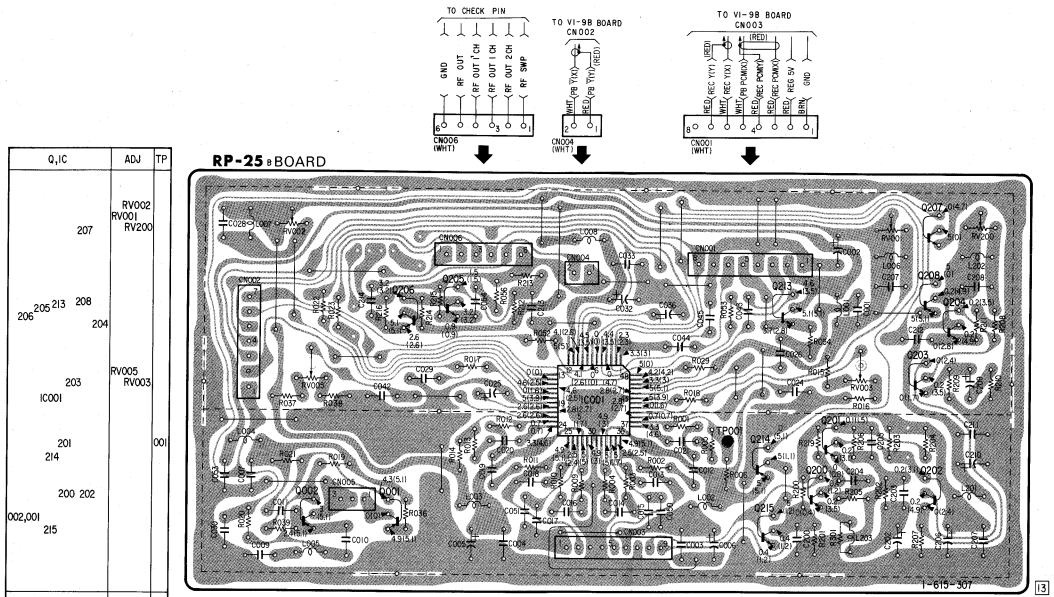
–Ref. No. RP-25B BOA



RP-25B (HEAD AMP/FLYING ERASE) PRINTED WIRING BOARD

– Ref. No. RP-25B BOARD : 3000 series –





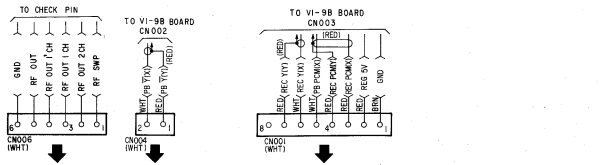
Note (Printed Wiring Boards):

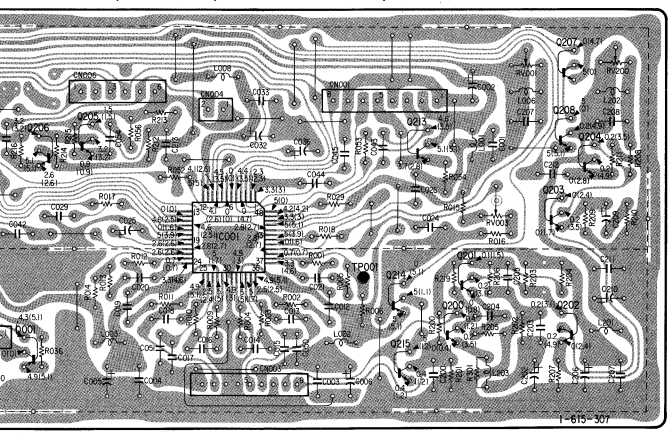
- o– : Indicates a leadwire mounted on the com
- •– : Indicates a leadwire mounted on the prin
- soldering side.
- B + pattern

- Digital transistor (RP-25B: Q207, 208, 214, 215 with resistors.
  Refer to the RP-25B board schematic diagram transistor.

ARD

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

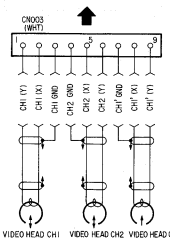




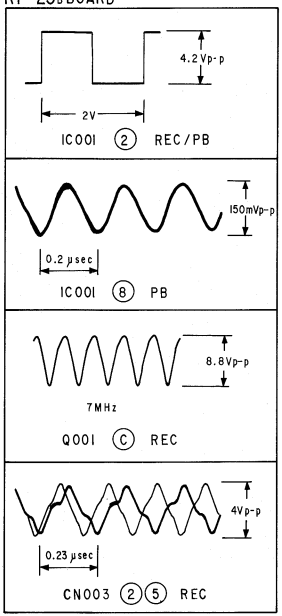
I-615-307

13

no mark : REC mode
( ) : PB mode

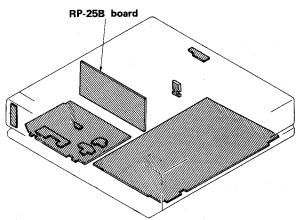


RP-25B BOARD



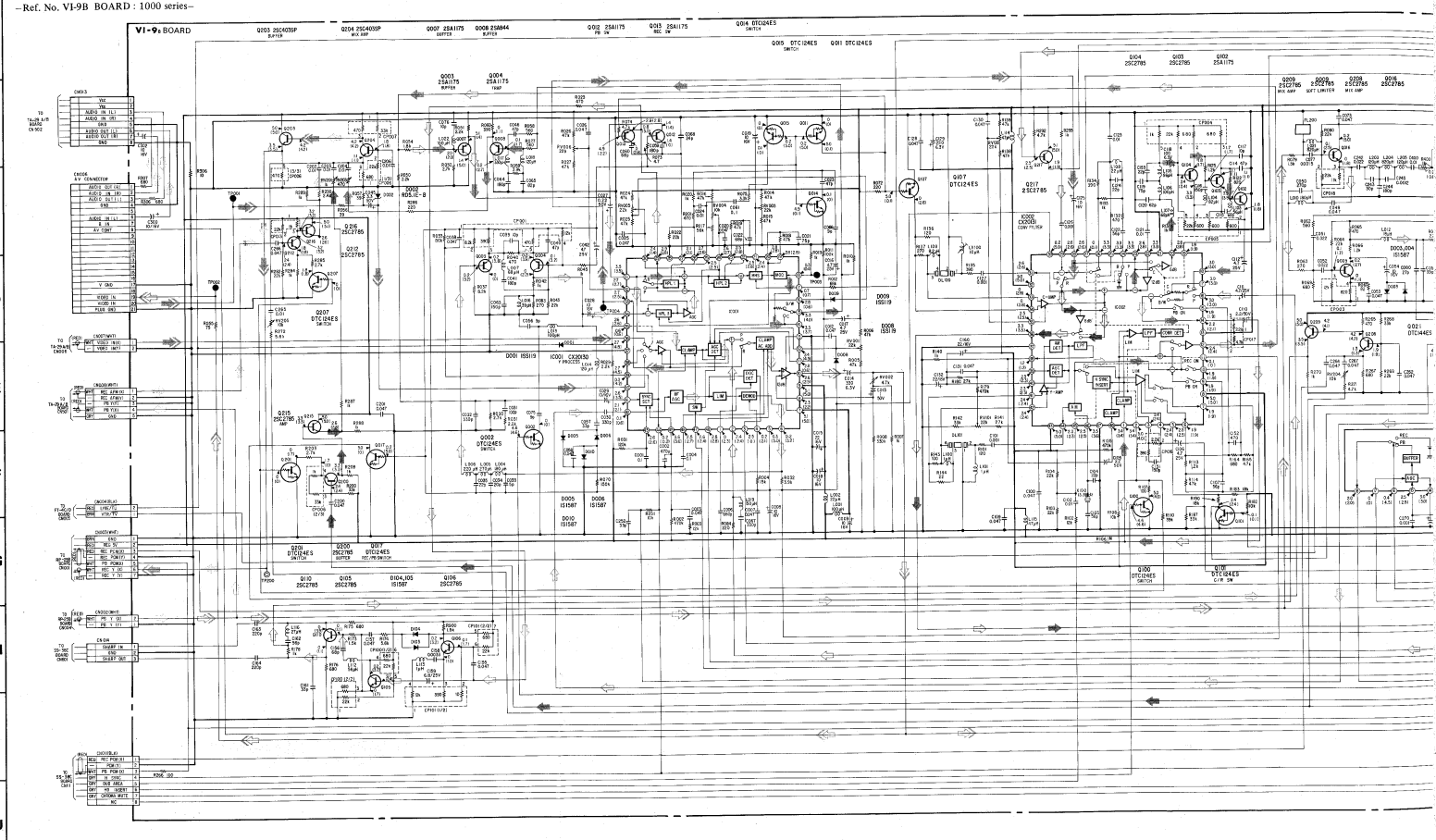
Note (Printed Wiring Boards):

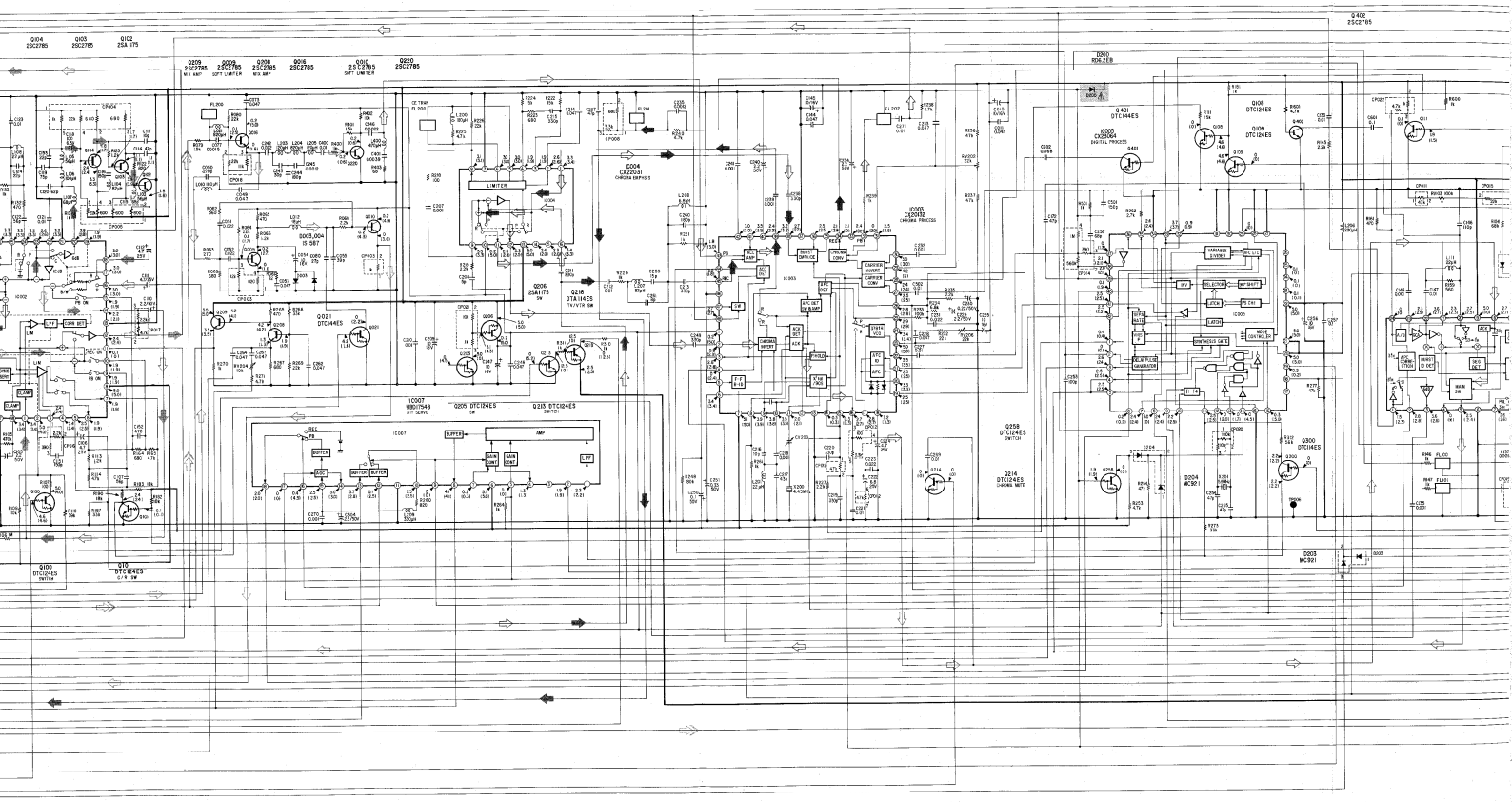
- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- Digital transistor (RP-25B: Q207, 208, 214, 215) transistor with resistors.
  Refer to the RP-25B board schematic diagram for digital transistor.

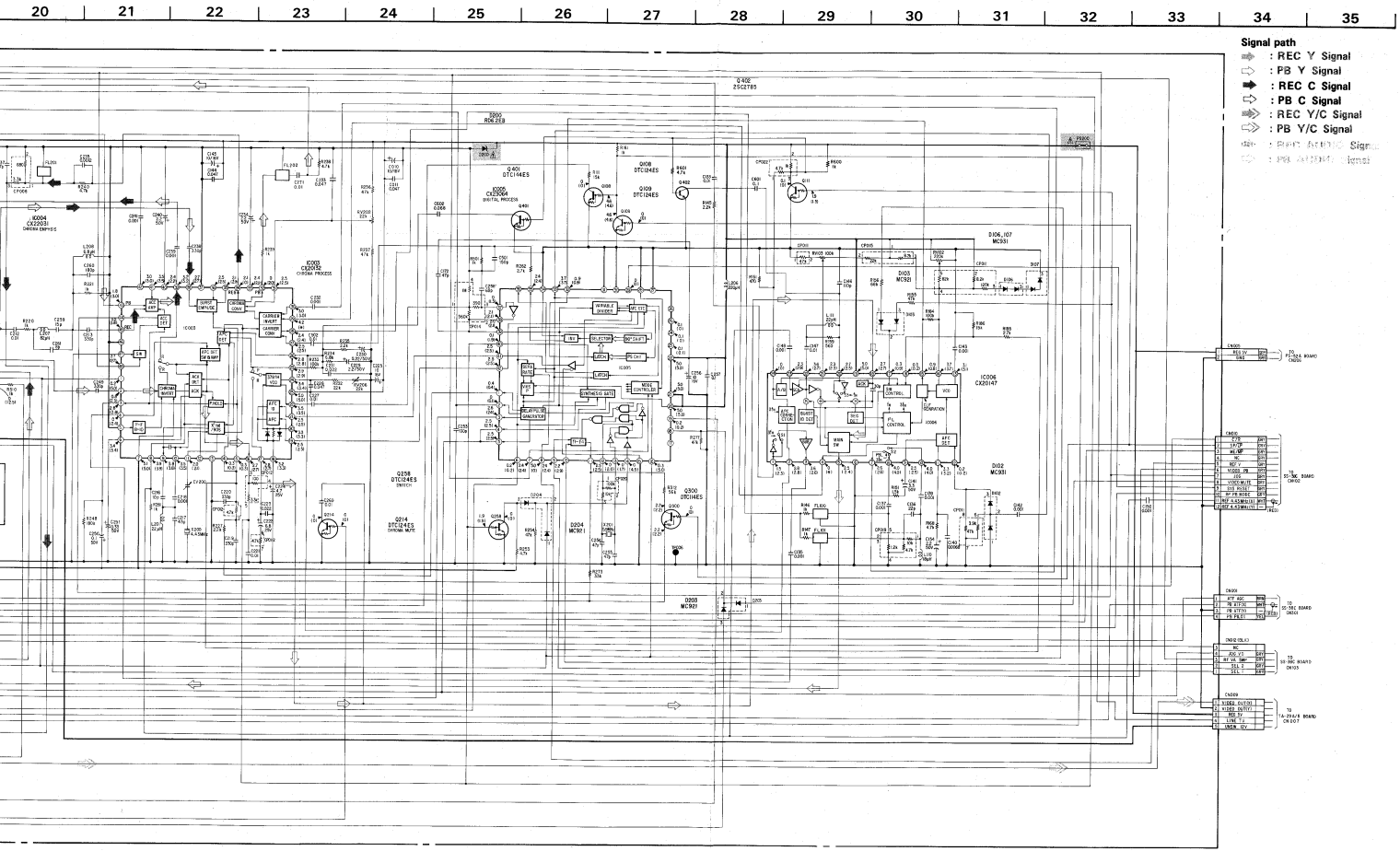


VI-9B (VIDEO) SCHEMATIC DIAGRAM

–Ref. No. VI-9B BOARD : 1000 series–






20
21
22
23
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25
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27
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29
30
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32
33
34
35
Signal path
: REC Y Signal
: PB Y Signal
: REC C Signal
: PB C Signal
: REC Y/C Signal
: PB Y/C Signal
IC004 CX20231
IC003 CX20232
IC005 CX20264
IC006 CX20147
Q401 DTC144ES
Q108 DTC144ES
Q109 DTC144ES
Q214 DTC124ES
Q238 DTC144ES
Q300 DTC144ES
Q200 MC920
D204 MC921
D103 MC921
D102 MC931
D106, 107 MC931
Q402 2SC2785
Q200 RD6.2EB
CN600
CN601
CN602
CN603
CN604
CN605
CN606
CN607
TO PS-105 BOARD CN004
TO SS-SIC BOARD CN002
TO SS-SIC BOARD CN003
TO SS-SIC BOARD CN103
TO TA-SW/LS BOARD CN007

VI-9B (VIDEO) PRINTED WIRING BOARD

Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

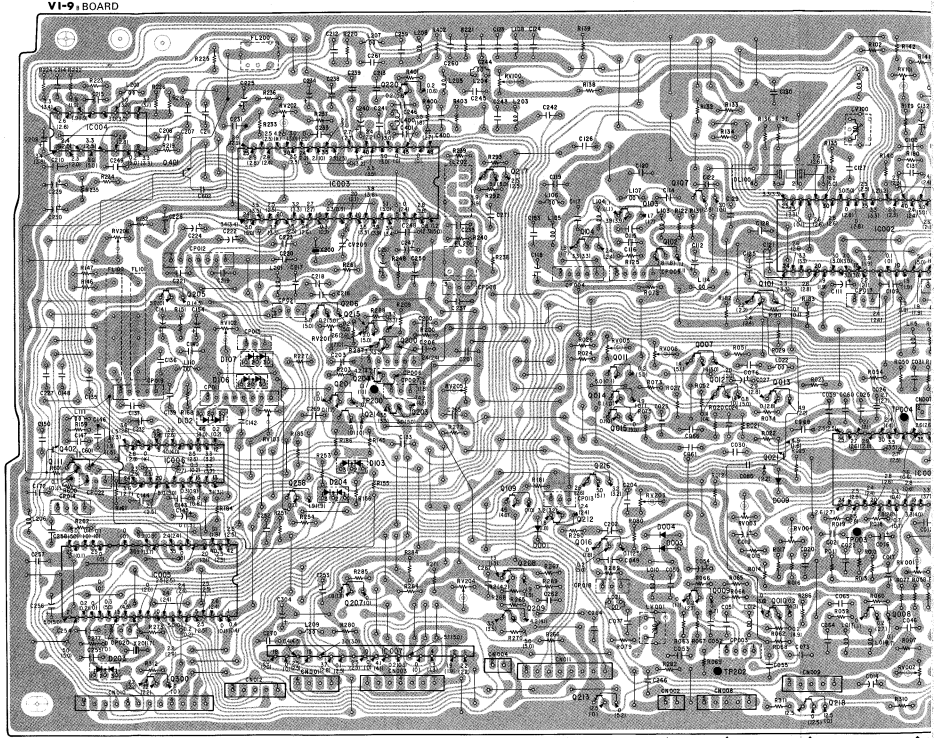
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

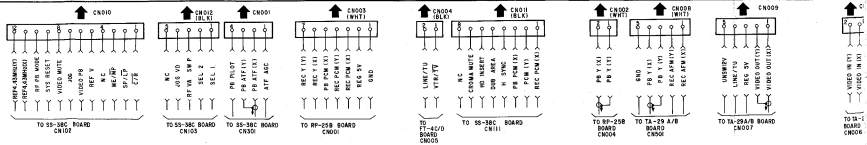
When indicating parts by reference number, please include the board name.

–Ref. No. VI-9B BOARD : 1000 series–

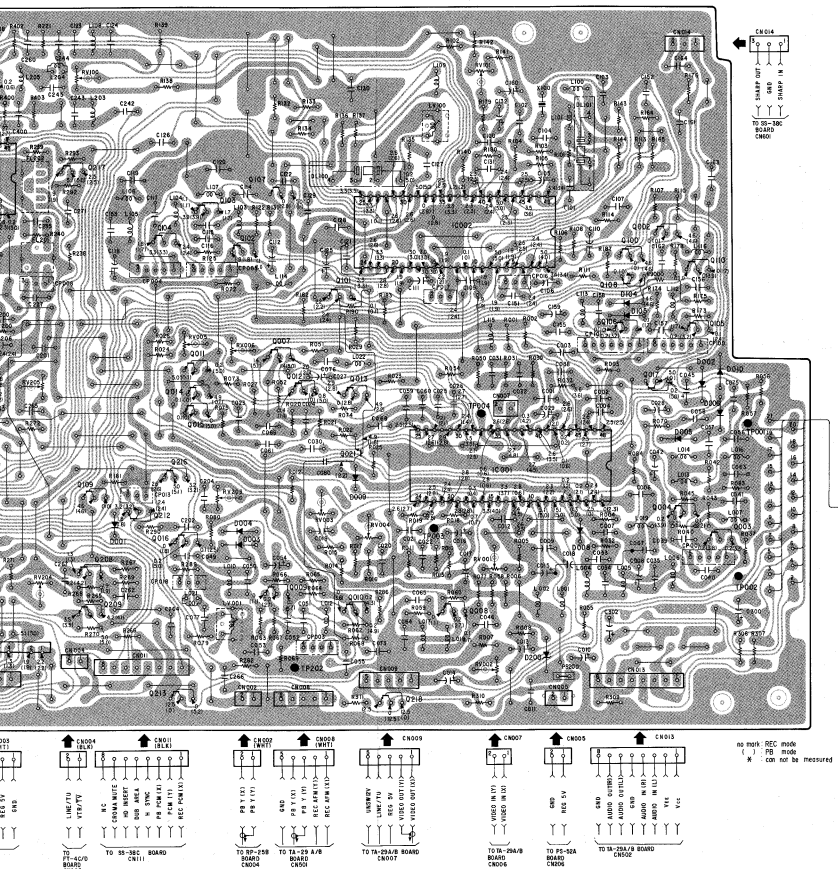
IC, Q	D	ADJ	TP
		101	
		100	
220		202	
IC004			
IC003			
217			
107			
IC002			
103			
		206	
002			
104			
102	100		
110			
205	101 108		
	104		
206			
	105	201	
215		102	
106			
105			
200		005	
007	107	006	
	010		
011			
106	002		
204		205	
012			200
201 014 013	017	103	004,001
015			
203	102 006		
214			
	005		
IC006 021			
111	103		
IC001	009		
216		203	
258	204		
109		003	
212 004			
	001 008	004	003
	004		
016 003	003		
		001	
IC005			
208			
207 009		204	002
010 008			
209			
IC008			
IC007	200		202
300	203	002	
213 218			
IC, Q	D	ADJ	TP

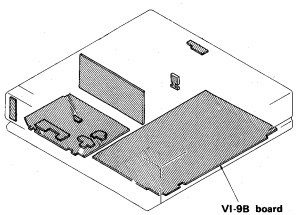
VI-9B BOARD





8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

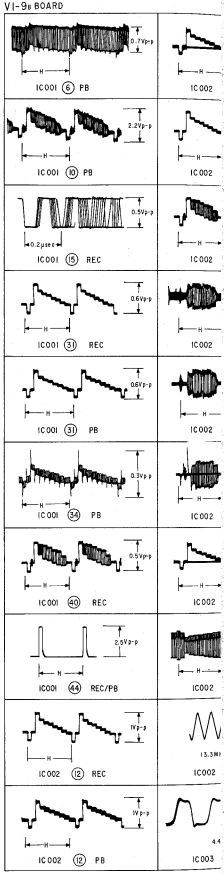




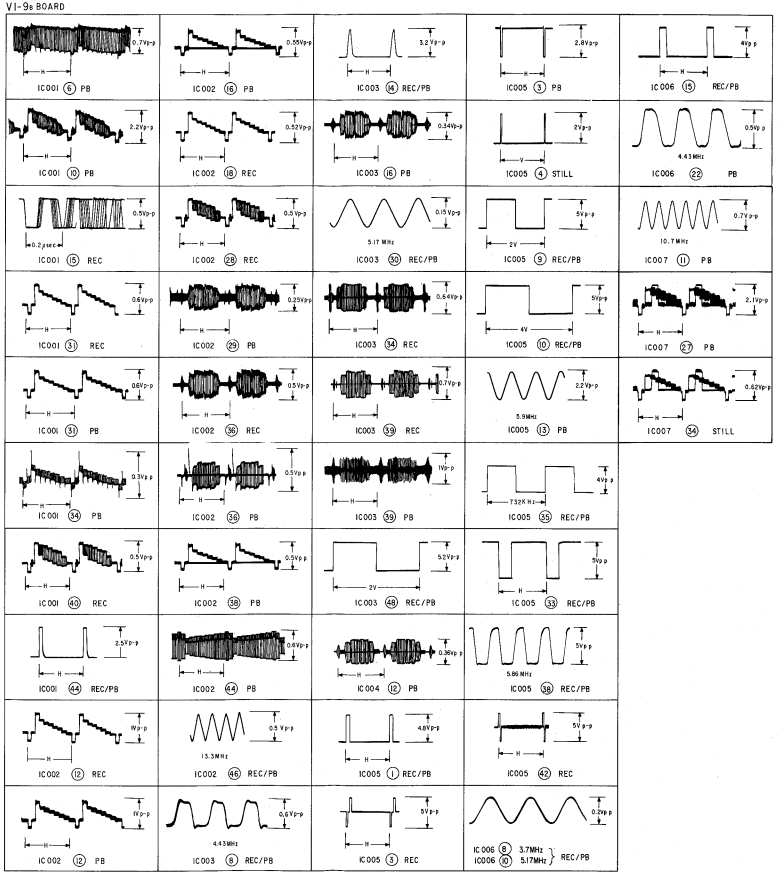
Note (Printed Wiring Boards):

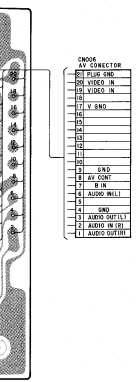
- o— : Indicates a leadwire mounted on the component side.
- —o : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- Digital transistor (VI-9B: Q002, 011, 014, 015, 017, 021, 100, 101, 107, 108, 109, 111, 201, 205, 207, 213, 214, 218, 258, 300, 401) transistor with resistors.
  Refer to the VI-9B board schematic diagram for digital transistor.

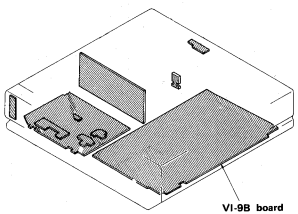
VI-9B BOARD



VI-9B BOARD





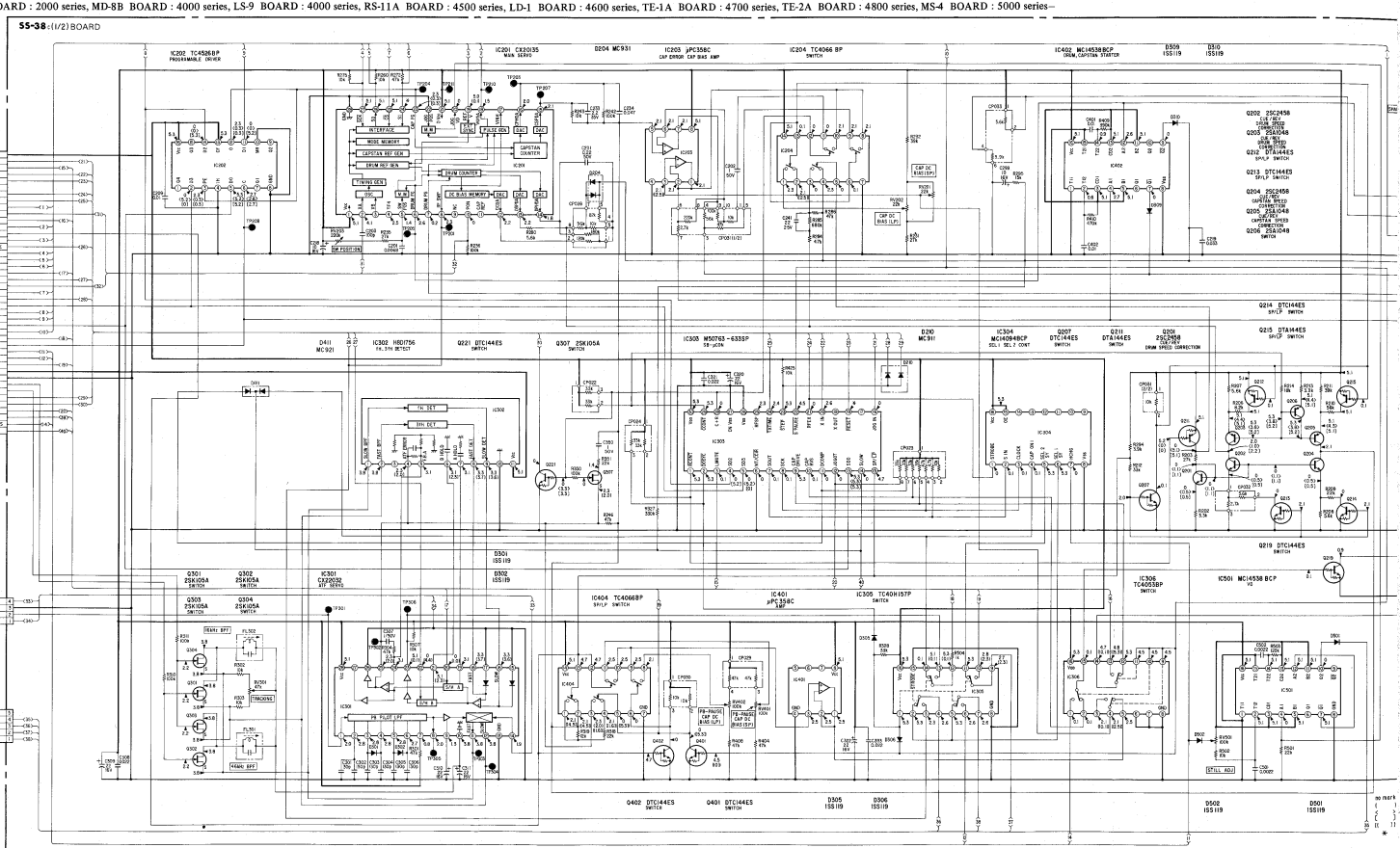


Note (Printed Wiring Boards):

- o— : Indicates a leadwire mounted on the component side.
- —o : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- Digital transistor (VI-9B: Q002, 011, 014, 015, 017, 021, 100, 101, 107, 108, 109, 111, 201, 205, 207, 213, 214, 218, 258, 300, 401) transistor with resistors.
  Refer to the VI-9B board schematic diagram for digital transistor.

–Ref. No. SS-38C BOARD : 2000 series, MD-8B BOARD : 4000 series, LS-9 BOARD : 4000 series, RS-11A BOARD : 4500 series, LD-1 BOARD : 4600 series, TE-1A BOARD : 4700 series, TE-2A BOARD : 4800 series, MS-4 BOARD : 5000 series–

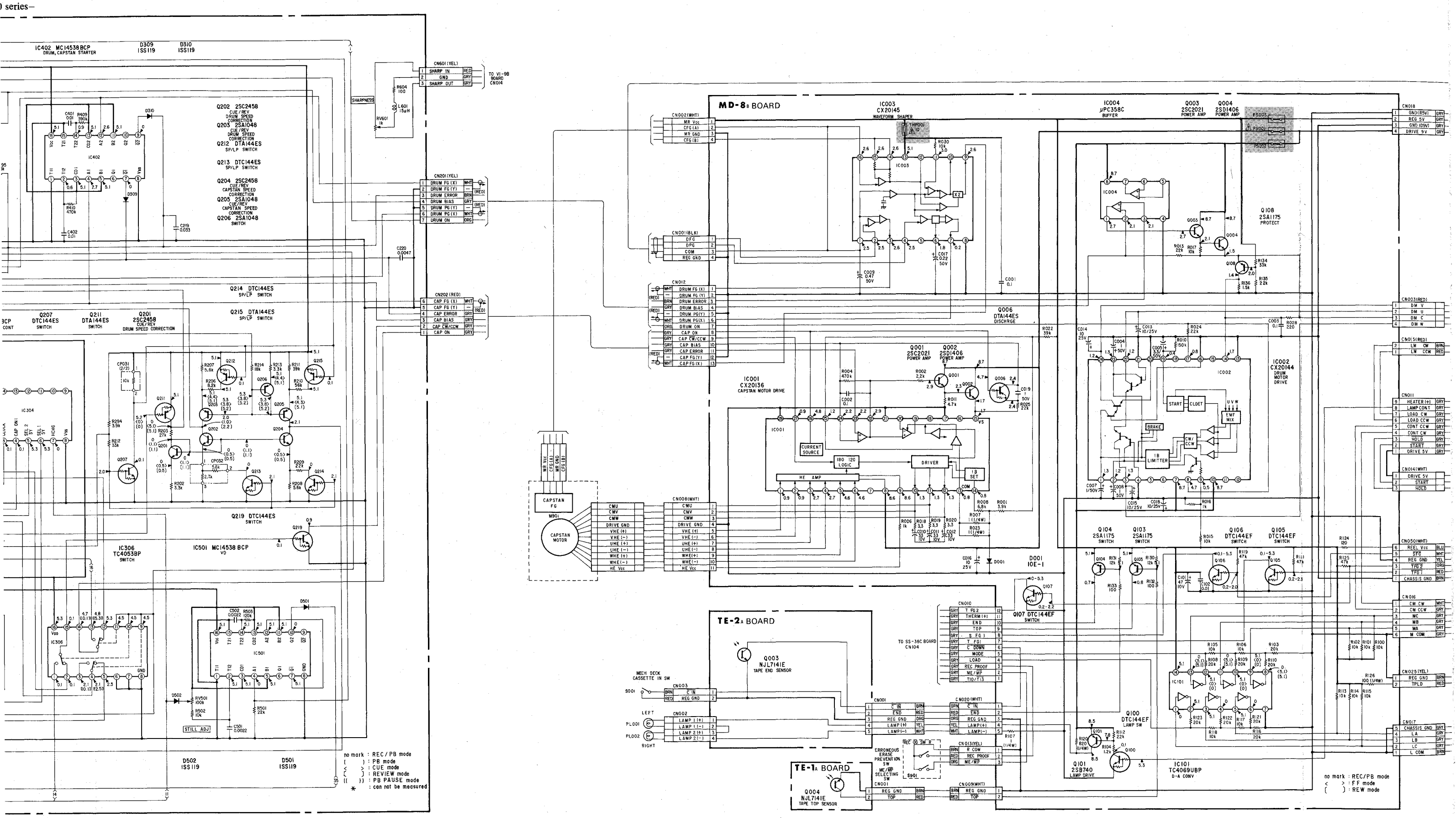
SS-38 (1/2) BOARD



TE-1A (TAPE END SENSOR) TE-2A (TAPE END SENSOR) MS-4 (MODE SW) SCHEMATIC DIAGRAMS

13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29

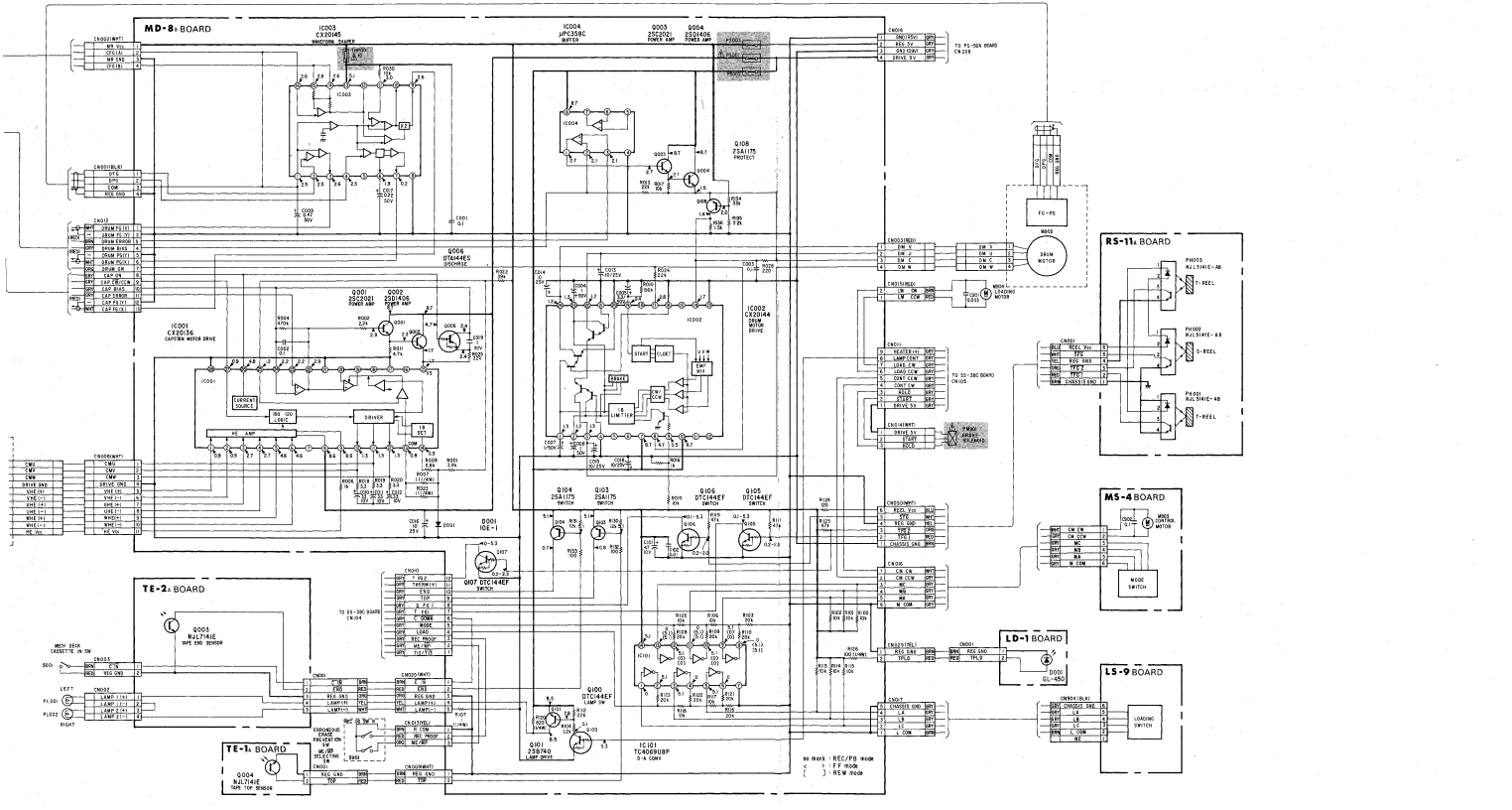
) series–



IC402 MC14538BCP DRUM, CAPSTAN STARTER
D309 1SS119
D310 1SS119
Q202 2SC2458 CUE/REV DRUM SPEED CORRECTION
Q203 2SA1048 CUE/REV DRUM SPEED CORRECTION
Q212 DTA144ES SP/LP SWITCH
Q213 DTC144ES SP/LP SWITCH
Q204 2SC2458 CUE/REV CAPSTAN SPEED CORRECTION
Q205 2SA1048 CUE/REV CAPSTAN SPEED CORRECTION
Q206 2SA1048 SWITCH
Q214 DTC144ES SP/LP SWITCH
Q215 DTA144ES SP/LP SWITCH
Q207 DTC144ES SWITCH
Q211 DTA144ES SWITCH
Q201 2SC2458 CUE/REV DRUM SPEED CORRECTION
Q219 DTC144ES SWITCH
IC306 TC4053BP SWITCH
IC501 MC14538BCP VD
STILL ADJ
D502 1SS119
D501 1SS119
CN601 (YEL)
TO VI-9B BOARD CN014
SHARPNESS
CN201 (YEL)
CN202 (RED)
CAPSTAN FG
M901
CAPSTAN MOTOR
CN008 (WHT)
MD-8B BOARD
IC003 CX20145 WAVEFORM SHAPER
IC004 µPC358C BUFFER
Q003 2SC2021 POWER AMP
Q004 2SD1406 POWER AMP
Q108 2SA1175 PROTECT
Q006 DTA144ES DISCHRGE
Q001 2SC2021 POWER AMP
Q002 2SD1406 POWER AMP
IC001 CX20136 CAPSTAN MOTOR DRIVE
IC002 CX20144 DRUM MOTOR DRIVE
D001 10E-1
Q104 2SA1175 SWITCH
Q103 2SA1175 SWITCH
Q106 DTC144EF SWITCH
Q105 DTC144EF SWITCH
Q107 DTC144EF SWITCH
Q100 DTC144EF LAMP SW
Q101 2SB740 LAMP DRIVE
IC101 TC4069UBP D-A CONV
TO SS-36C BOARD CN104
TE-2A BOARD
Q003 NJL7141E TAPE END SENSOR
MECH DECK CASSETTE IN SW
S001
LEFT
PL001
PL002
RIGHT
ERRONEOUS ERASE PREVENTION SW
ME/MP SELECTING SW
S901
TE-1A BOARD
Q004 NJL7141E TAPE TOP SENSOR
no mark : REC/PB mode
( ) : PB mode
< > : CUE mode
[ ] : REVIEW mode
(( )) : PB PAUSE mode
* : can not be measured
no mark : REC/PB mode
< > : FF mode
( ) : REW mode

(SENSOR) **MS-4** (MODE SW) SCHEMATIC DIAGRAMS

20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35

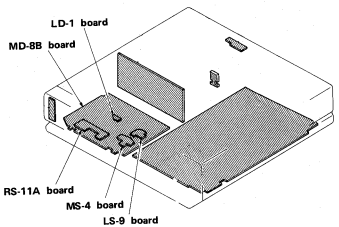


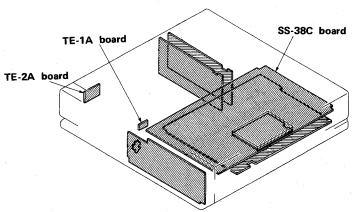
Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

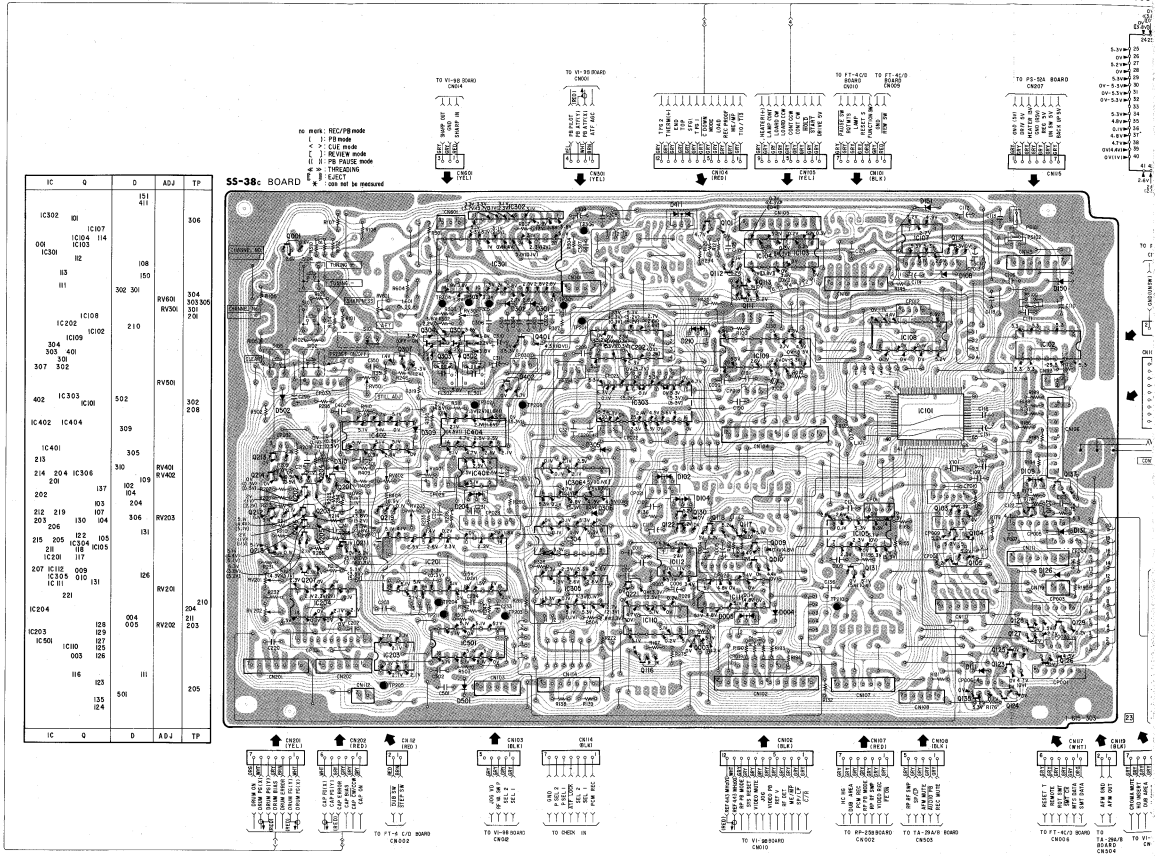
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

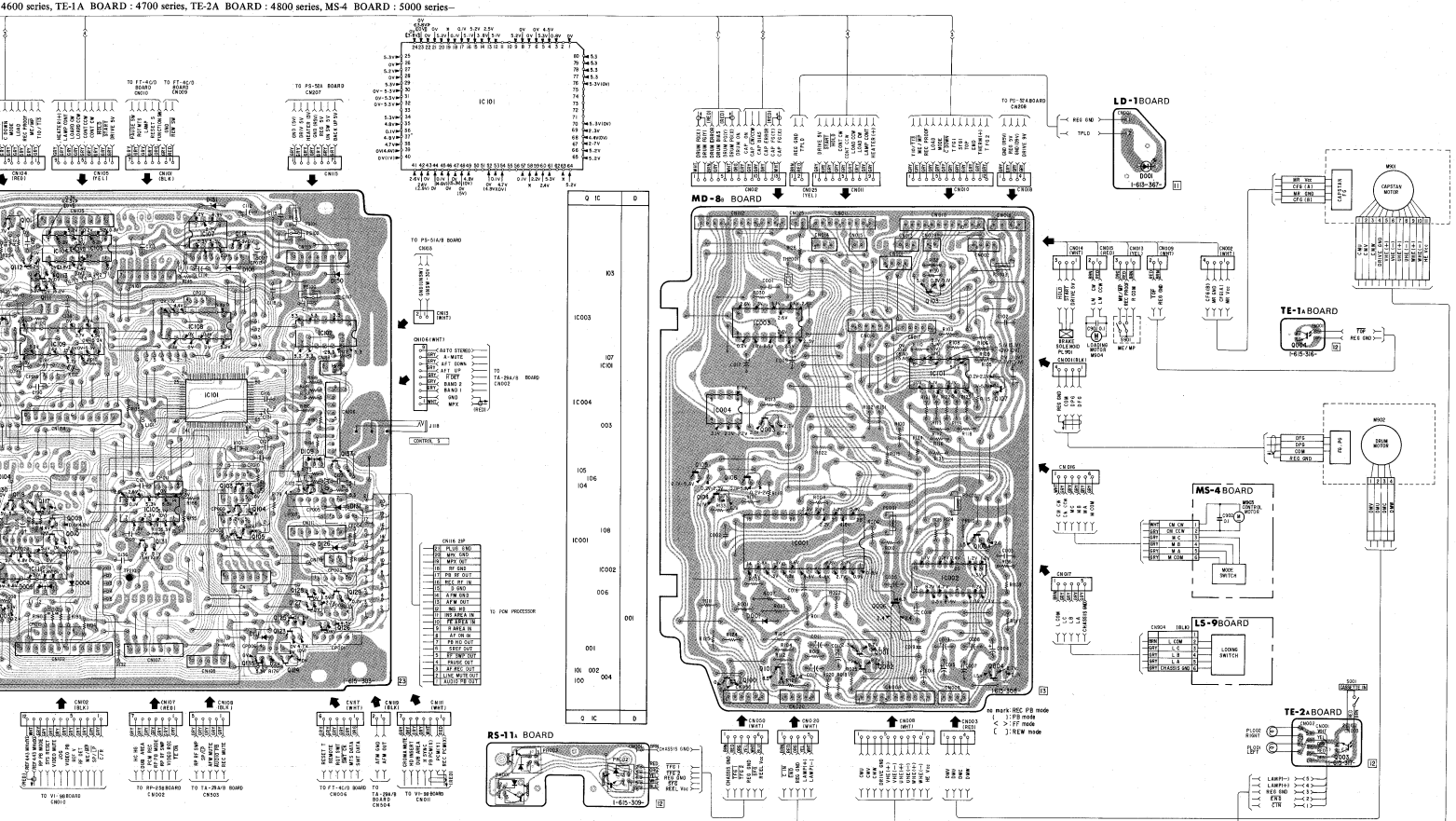


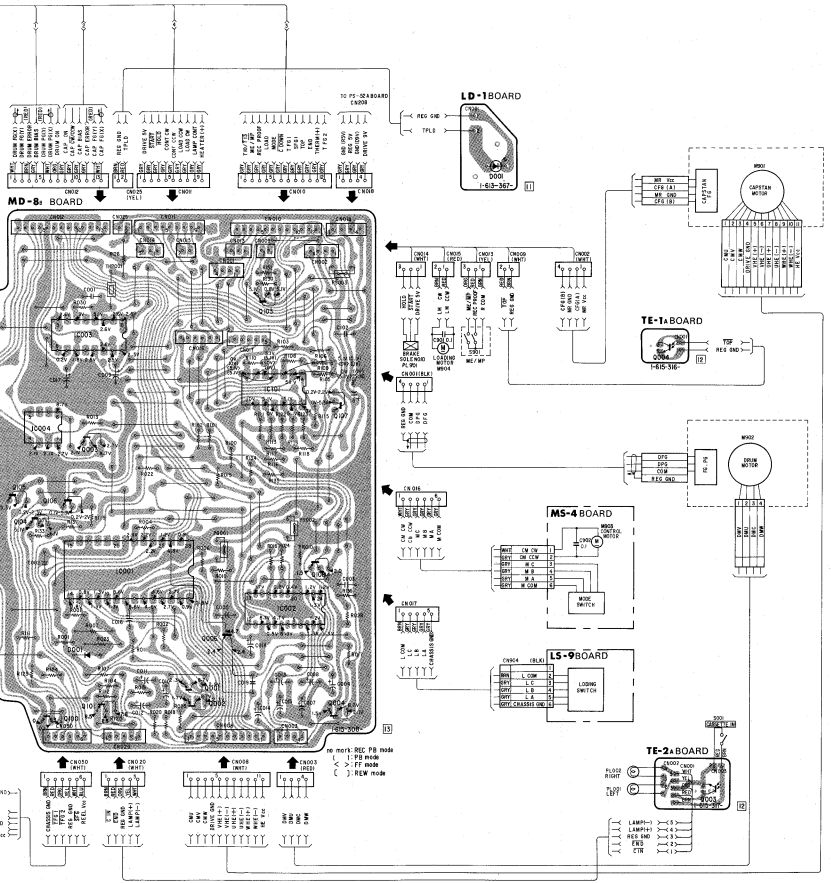


—Ref. No. SS-38C BOARD : 2000 series, MD-8B BOARD : 4000 series, LS-9 BOARD : 4000 series, RS-11A BOARD : 4500 series, LD-1 BOARD : 4600 series, TE-1A BOARD : 4700 series, TE-2A BOARD : 4800 series, MS-4 BOARD : 5000

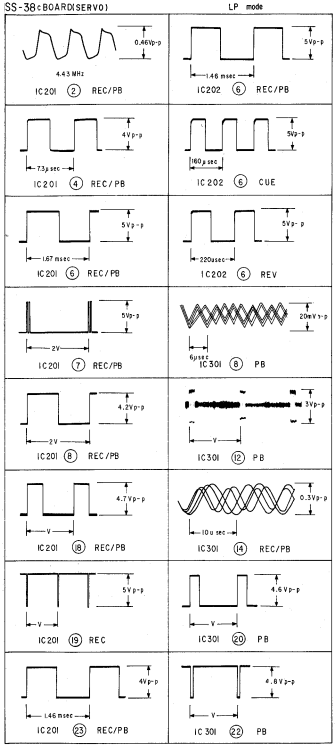


4600 series, TE-1A BOARD : 4700 series, TE-2A BOARD : 4800 series, MS-4 BOARD : 5000 series–

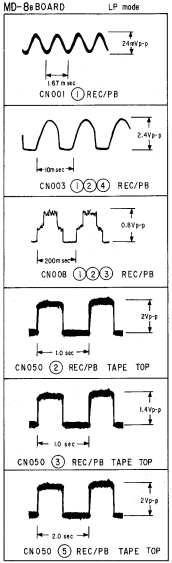




SS-38C BOARD (SERVO) LP mode



MD-8B BOARD LP mode



Note (Printed Wiring Boards):

- o— : Indicates a leadwire mounted on the component side.
- —o : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- B - pattern

- Digital transistor (MD-8B: Q006, 100, 105, 106, 107, SS-38C: Q125, 151, 207, 211, 212, 213, 214, 215, 219, 221, 401, 402) transistor with resistors.
  Refer to the MD-8B, SS-38C boards schematic diagram for digital transistor.

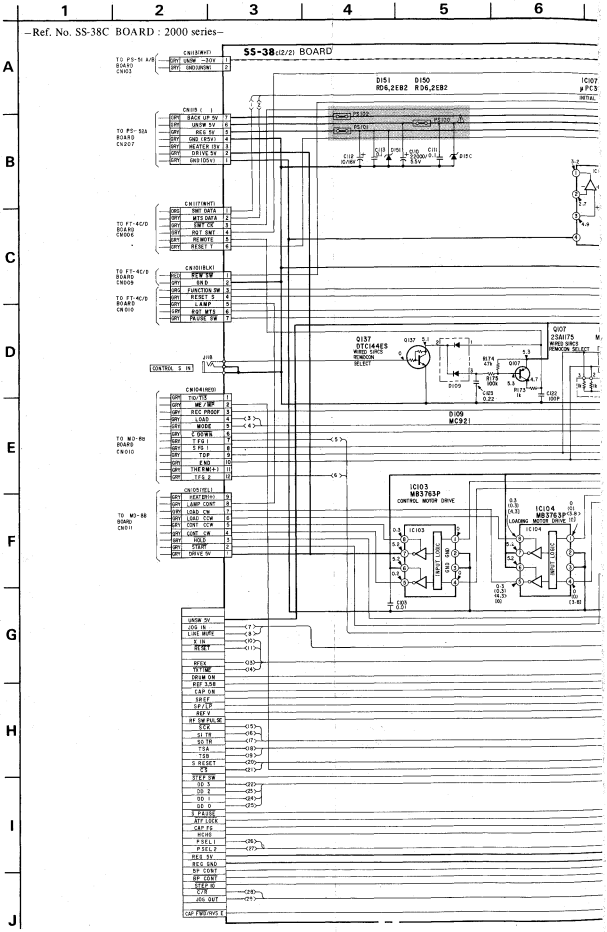
Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SYSTEM CONTROL

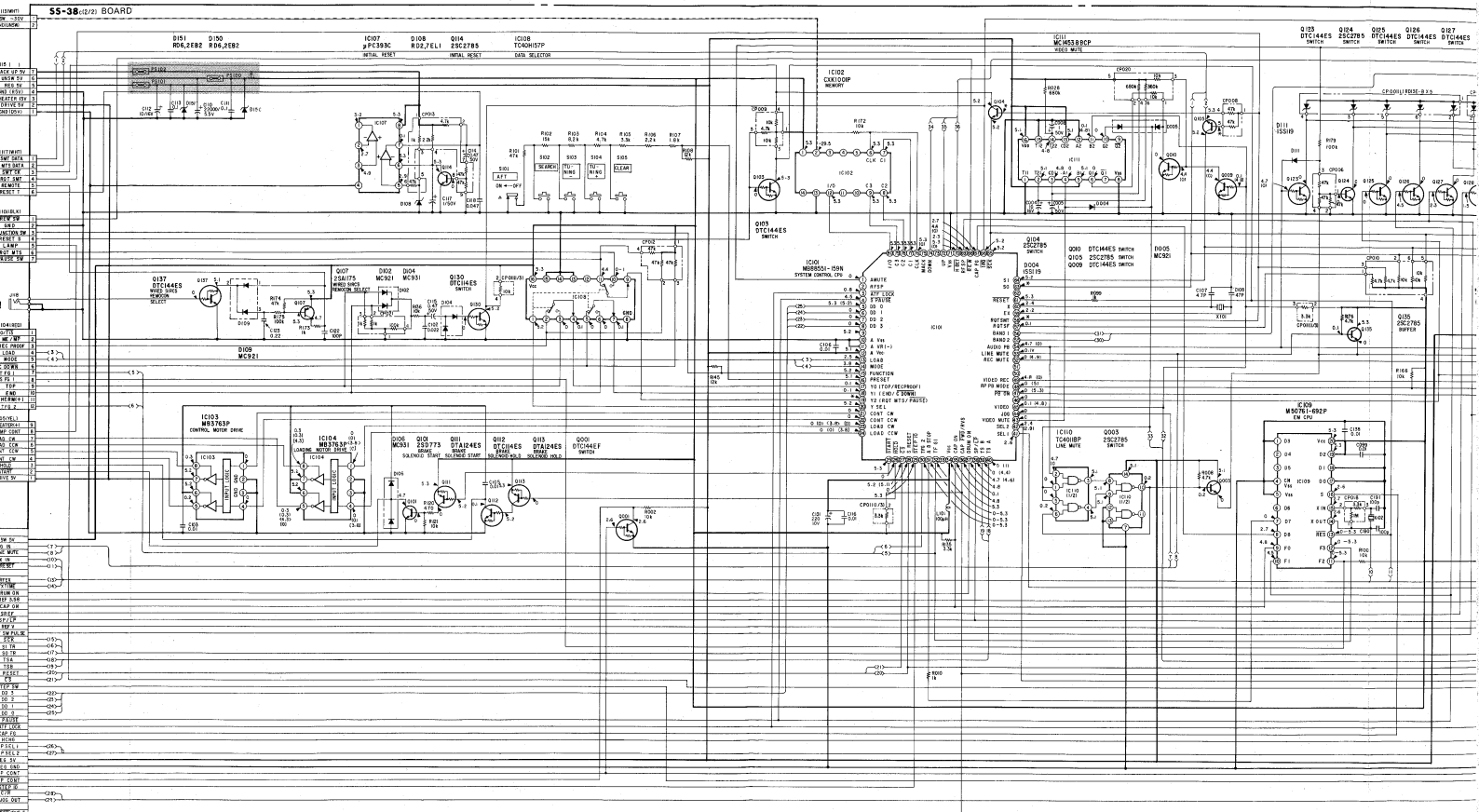


SS-38C

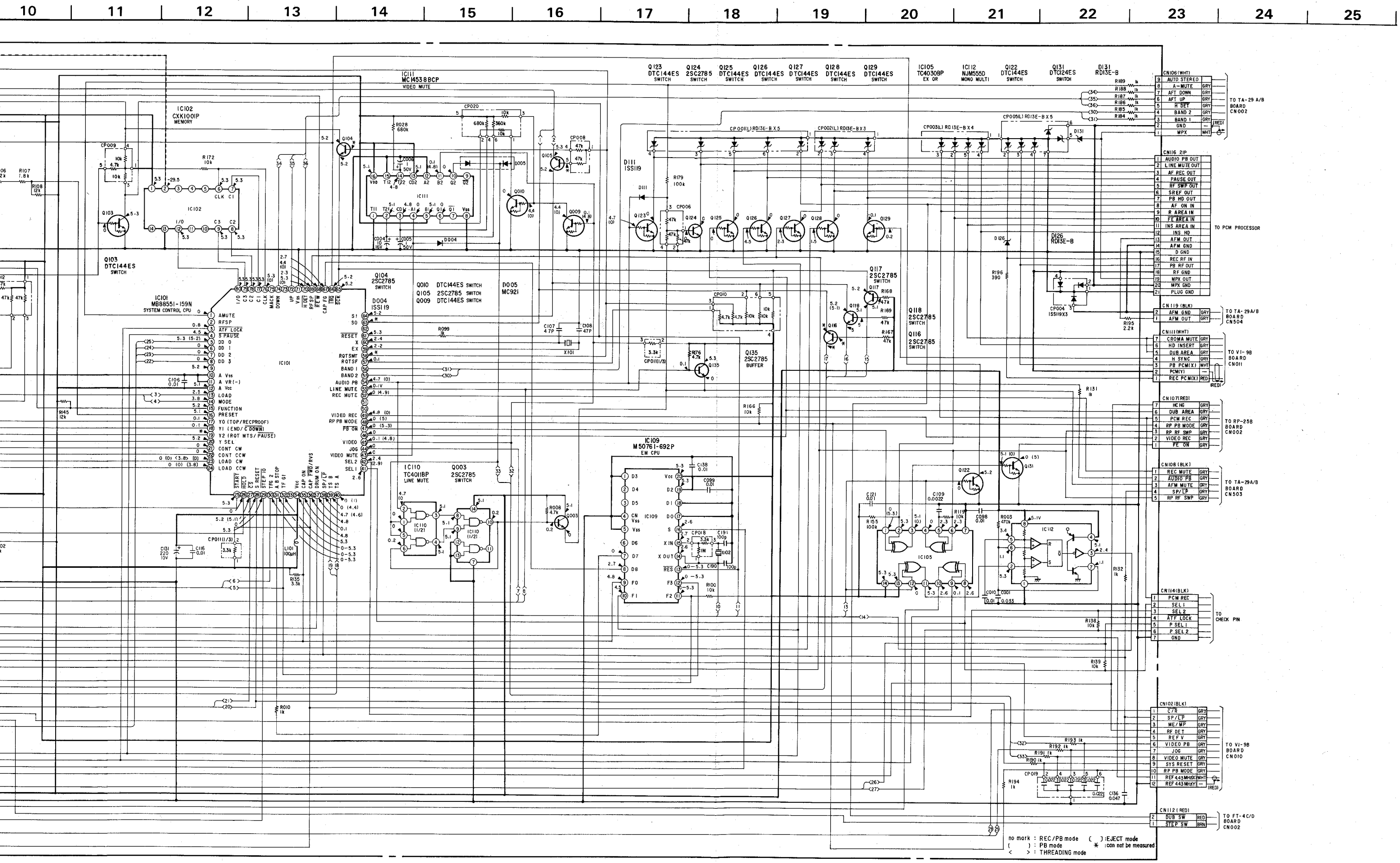
(SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

series–

SS-38(2/2) BOARD



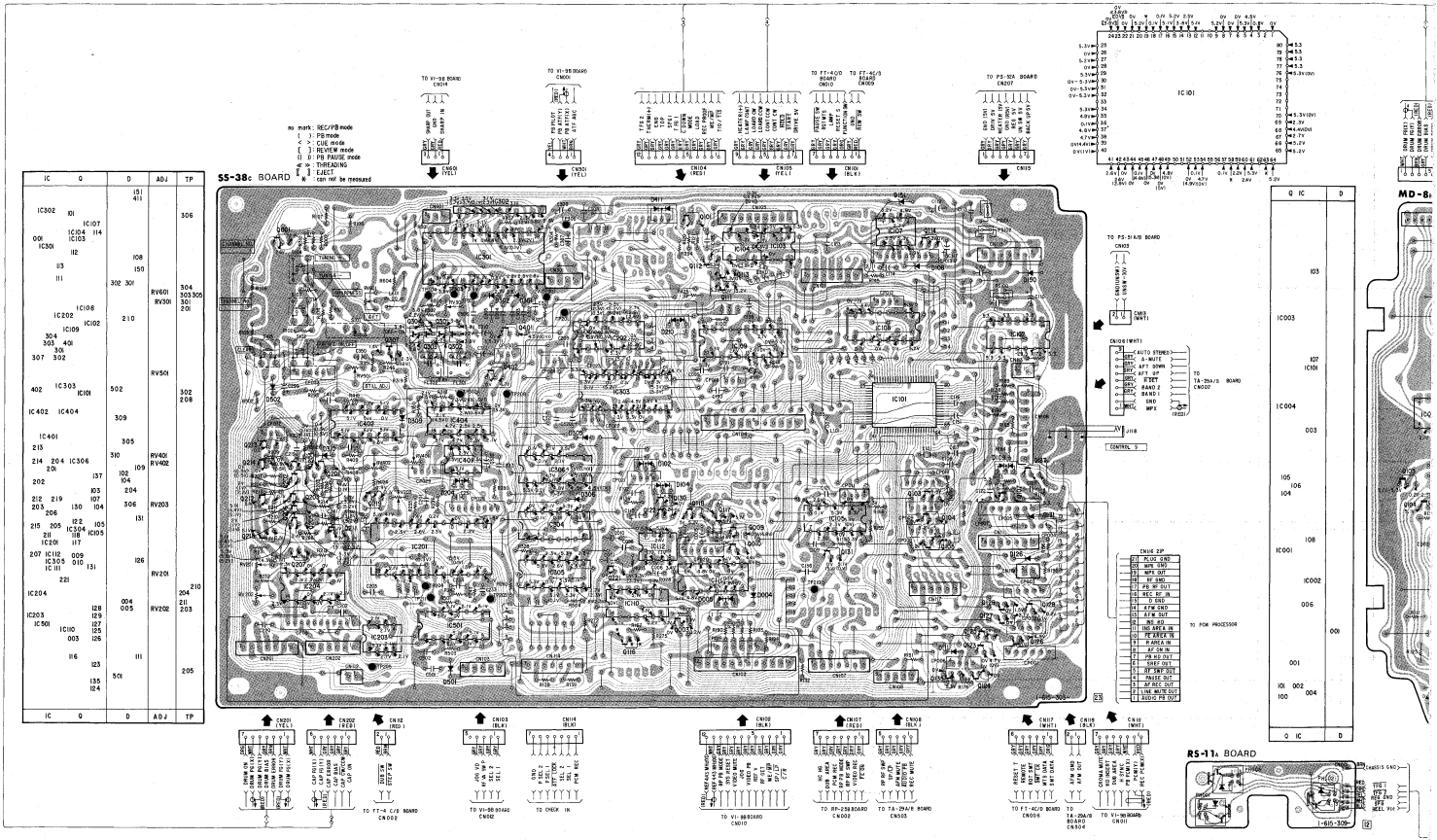
HEMATIC DIAGRAM


10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
IC102 CXK1001P MEMORY
Q103 DTC144ES SWITCH
IC111 MC14538BCP VIDEO MUTE
Q104 2SC2785 SWITCH
D004 1SS119
Q010 DTC144ES SWITCH
Q105 2SC2785 SWITCH
Q009 DTC144ES SWITCH
D005 MC921
IC101 MB88551-159N SYSTEM CONTROL CPU
AMUTE
RFSP
ATF LOCK
S PAUSE
DD 0
DD 1
DD 2
DD 3
A Vss
A VR(-)
A Vcc
LOAD
MODE
FUNCTION
PRESET
Y0 (TOP/RECPROOF)
Y1 (END/C DOWN)
Y2 (RQT MTS/PAUSE)
Y SEL
CONT CW
CONT CCW
LOAD CW
LOAD CCW
START
HOLD
CS
S RESET
STEP IO
TF6 2
A B STOP
TF 61
Vcc
CAP ON
CAP FWD/RVS
DRUM ON
SP/LP
TS B
TS A
SEL 1
SEL 2
VIDEO MUTE
JOG
VIDEO
PB ON
RP PB MODE
VIDEO REC
REC MUTE
LINE MUTE
AUDIO PB
BAND 2
BAND 1
RQTSF
RQTSMT
EX
X
RESET
SO
SI
I/O
C3
C2
C1
CLK
MACK
DOWN
UP
Vss
H DET
RFSP
REW
CAP FG
IRQ
SCK
IC110 TC4011BP LINE MUTE
Q003 2SC2785 SWITCH
IC109 M50761-692P EM CPU
Q123 DTC144ES SWITCH
Q124 2SC2785 SWITCH
Q125 DTC144ES SWITCH
Q126 DTC144ES SWITCH
Q127 DTC144ES SWITCH
Q128 DTC144ES SWITCH
Q129 DTC144ES SWITCH
IC105 TC4030BP EX OR
IC112 NJM555D MONO MULTI
Q122 DTC144ES SWITCH
Q131 DTC124ES SWITCH
D131 RD13E-B
D111 1SS119
Q117 2SC2785 SWITCH
Q118 2SC2785 SWITCH
Q116 2SC2785 SWITCH
Q135 2SC2785 BUFFER
D126 RD13E-B
CP004 1SS119X3
CN106(WHT)
AUTO STEREO
A-MUTE
AFT DOWN
AFT UP
H DET
BAND 2
BAND 1
GND
MPX
TO TA-29 A/B BOARD CN002
CN116 21P
AUDIO PB OUT
LINE MUTE OUT
AF REC OUT
PAUSE OUT
RF SWP OUT
SREF OUT
PB HD OUT
AF ON IN
R AREA IN
FE AREA IN
INS AREA IN
INS HD
AFM OUT
AFM GND
D GND
REC RF IN
PB RF OUT
RF GND
MPX OUT
MPX GND
PLUG GND
TO PCM PROCESSOR
CN119 (BLK)
AFM GND
AFM OUT
TO TA-29A/B BOARD CN504
CN111(WHT)
CROMA MUTE
HD INSERT
DUB AREA
H SYNC
PB PCM(X)
PCM(Y)
REC PCM(X)
TO VI-9B BOARD CN011
CN107(RED)
HCHG
DUB AREA
PCM REC
RP PB MODE
RP RF SWP
VIDEO REC
FE ON
TO RP-25B BOARD CN002
CN108 (BLK)
REC MUTE
AUDIO PB
AFM MUTE
SP/LP
RP RF SWP
TO TA-29A/B BOARD CN503
CN114(BLK)
PCM REC
SEL 1
SEL 2
ATF LOCK
P SEL 1
P SEL 2
GND
TO CHECK PIN
CN102 (BLK)
C/R
SP/LP
ME/MP
RF DET
REF V
VIDEO PB
JOG
VIDEO MUTE
SYS RESET
RP PB MODE
REF 4.43MHz(X)
REF 4.43MHz(Y)
TO VI-9B BOARD CN010
CN112 (RED)
DUB SW
STEP SW
TO FT-4C/D BOARD CN002
no mark : REC/PB mode
( ) : PB mode
< > : THREADING mode
[ ] : EJECT mode
* : can not be measured

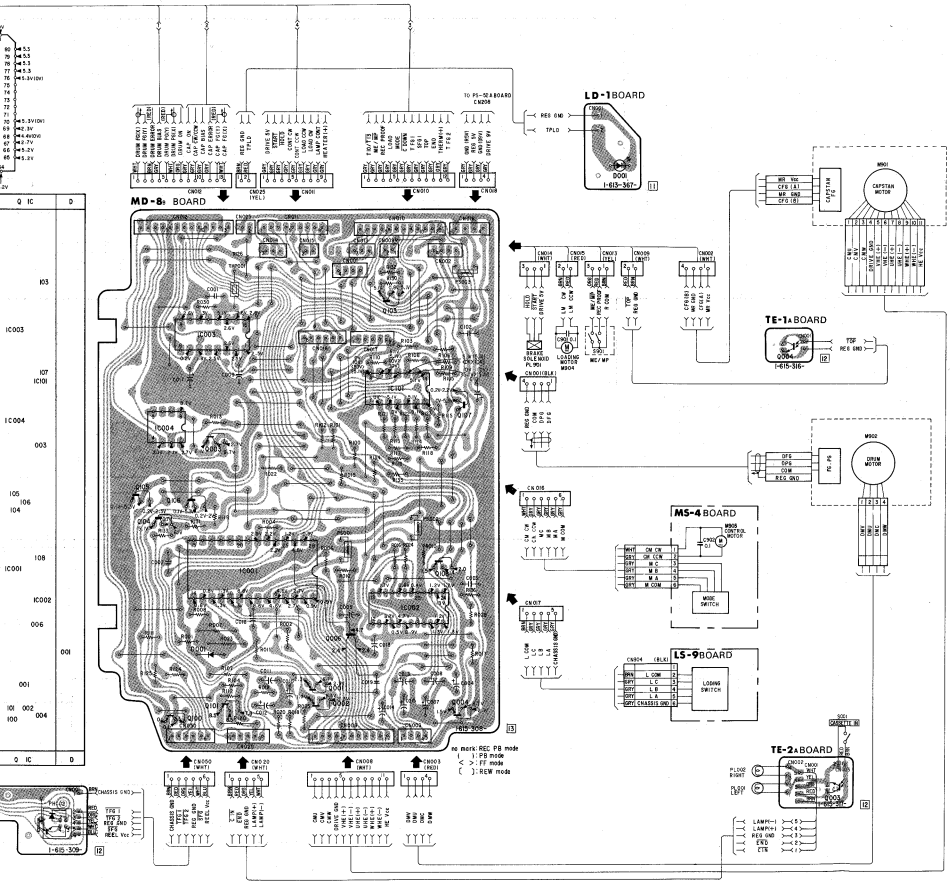
SS-38C

(SERVO/SYSTEM CONTROL) PRINTED WIRING BOARD

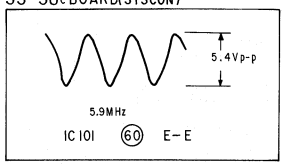
–Ref. No. SS-38C BOARD : 2000 series, MD-8B BOARD : 4000 series, LS-9 BOARD : 4000 series, RS-11A BOARD : 4500 series, LD-1 BOARD : 4600 series, TE-1A BOARD : 4700 series, TE-2A BOARD : 4800 series, MS-4 BOARD : 5000 series–

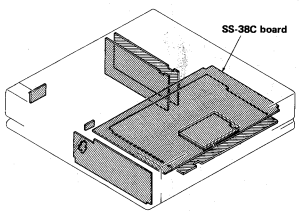


15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31



SS-38C BOARD(SYSCON)





Note (Printed Wiring Boards):

- o— : Indicates a leadwire mounted on the component side.
- —o : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- B - pattern

- Digital transistor (SS-38C: Q001, 009, 010, 103, 111, 112, 113, 122, 123, 126, 127, 128, 129, 130, 131, 137) transistor with resistors.
  Refer to the SS-38C board schematic diagram for digital transistor.

TA-29A/B (TUNER/VIF/AFM) SCHEMATIC DIAGRAM

Note (Schematic Diagrams):

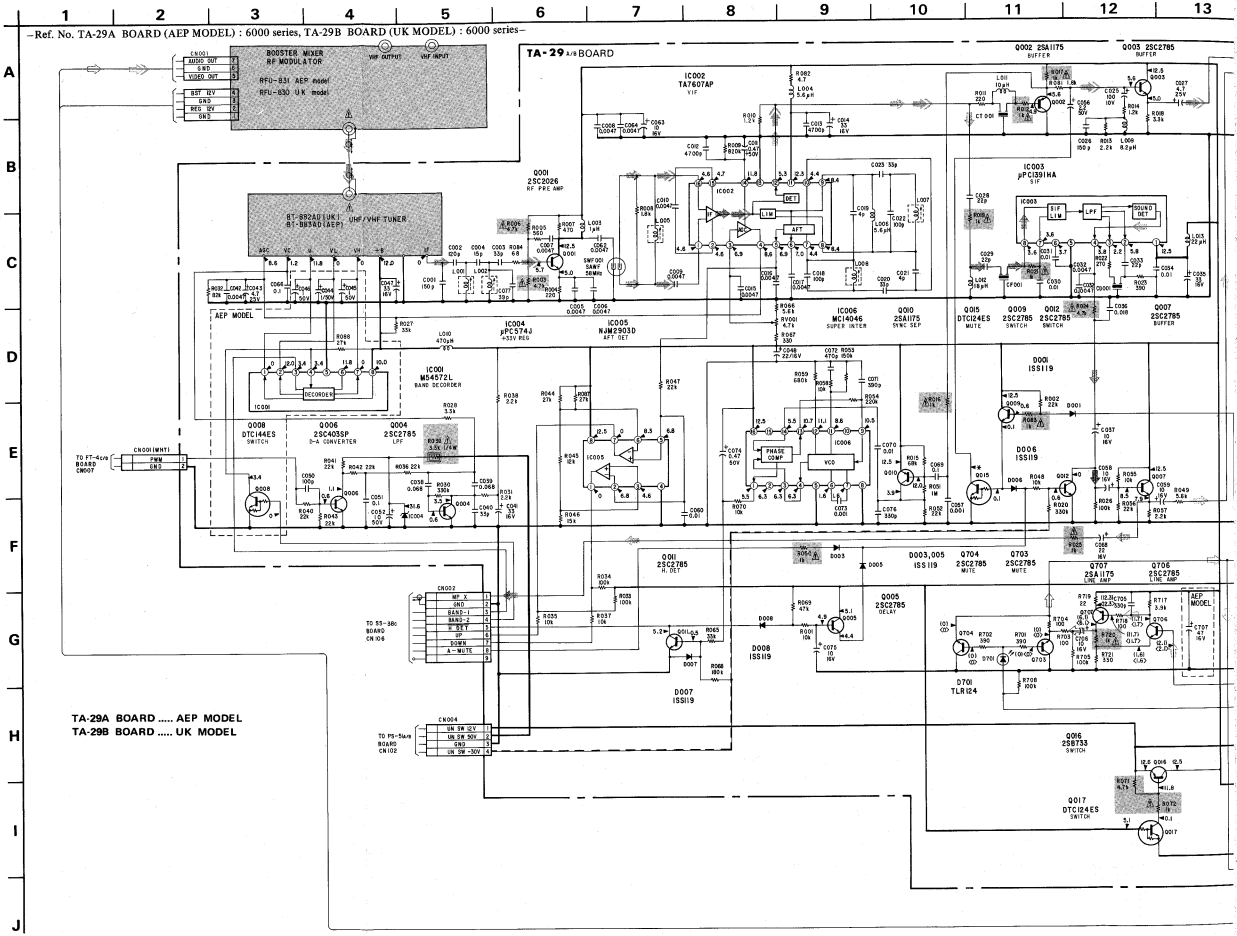
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω, MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

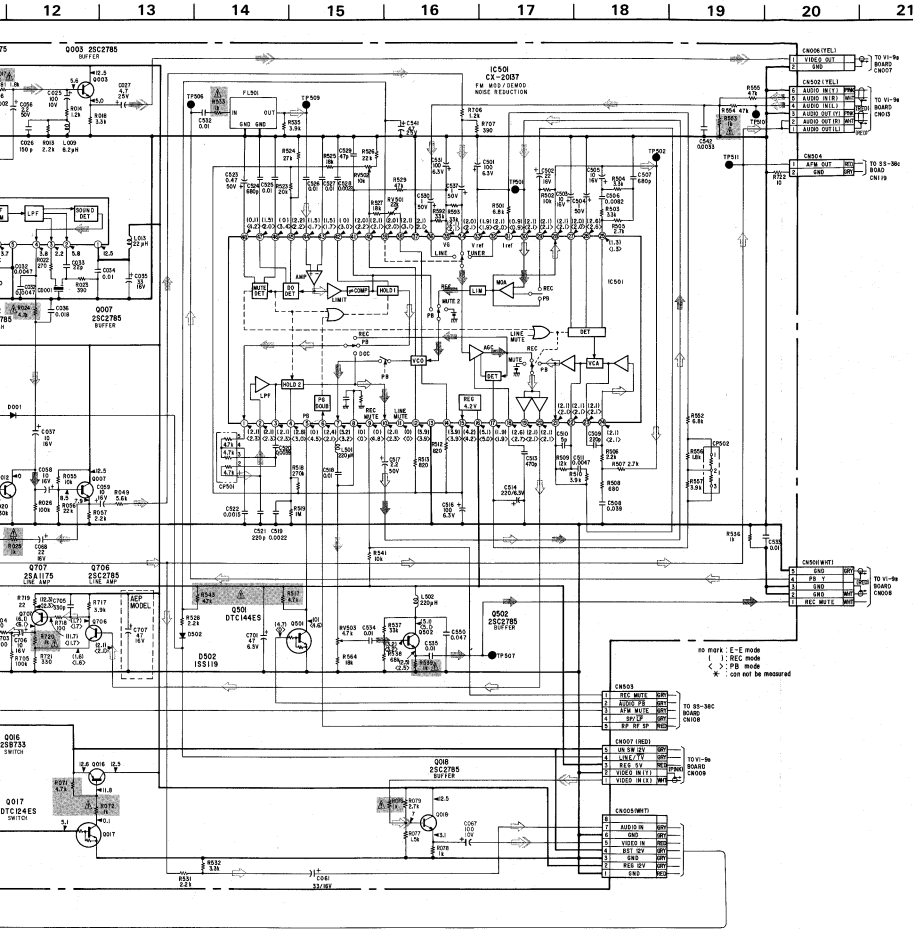
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Signal path

- : REC Y/C Signal
- : PB Y/C Signal
- : REC AUDIO Signal
- : PB AUDIO Signal




12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
IC501
CX-20117
FM MPX DEMOD
NOISE REDUCTION
Q003 2SC2785
BUFFER
Q007
2SC2785
BUFFER
Q706
2SC2785
LINE AMP
Q707
2SA1175
LINE AMP
Q501
DTC144ES
Q502
2SC2785
BUFFER
Q016
2SB733
SWITCH
Q017
DTC124ES
SWITCH
Q018
2SC2785
BUFFER
D502
1SS119
AEP
MODEL
CN006(YEL)
VIDEO OUT
GND
TO VI-9a
BOARD
CN007
CN502(YEL)
AUDIO IN(L)
AUDIO IN(R)
AUDIO OUT(L)
AUDIO OUT(R)
TO VI-9a
BOARD
CN013
CN504
AFM OUT
GND
TO SS-38c
BOARD
CN19
CN501(WHT)
GND
PB-V
GND
REC MUTE
TO VI-9a
BOARD
CN008
CN503
REC MUTE
AUDIO PB
AFM MUTE
SP/EP
RP RF SP
TO SS-38C
BOARD
CN108
CN007(RED)
UN SW 22V
LINE/TV
REG 5V
VIDEO IN(Y)
VIDEO IN(C)
TO VI-9a
BOARD
CN009
CN005(WHT)
AUDIO IN
GND
VIDEO IN
BST 12V
GND
REG 12V
GND
no mark : E-E mode
( ) : REC mode
< > : PB mode
* : can not be measured

TA-29A/B

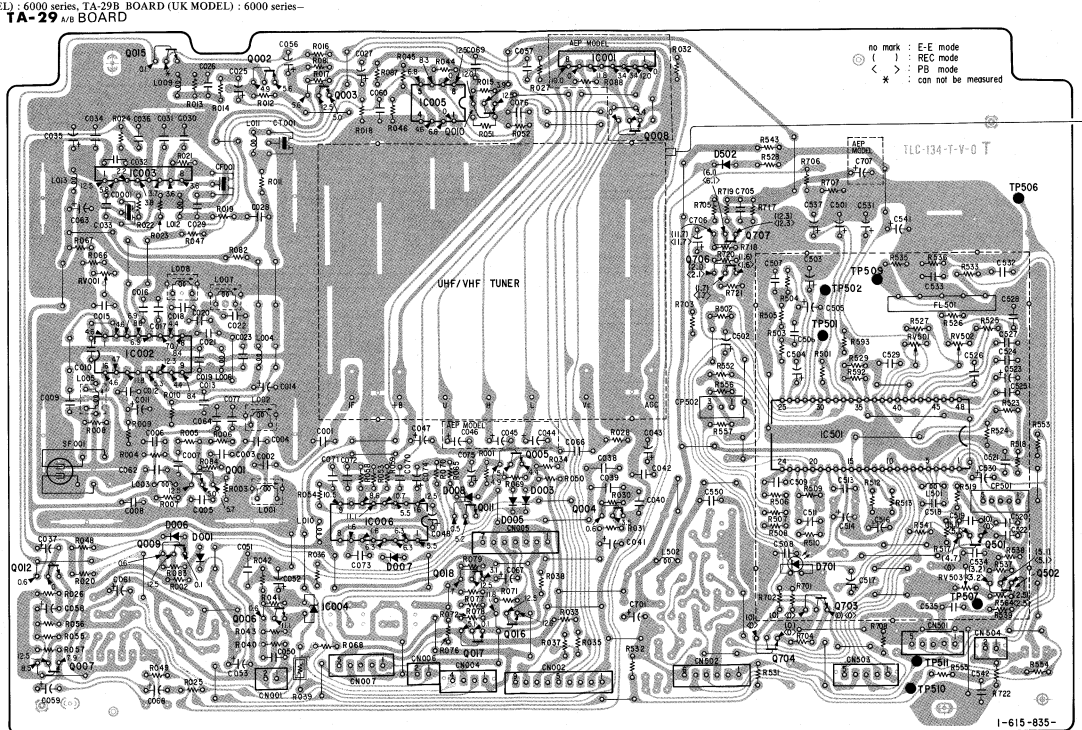
(TUNER/VIF/AFM) PRINTED WIRING BOARD

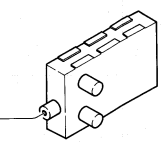
–Ref. No. TA-29A BOARD (AEP MODEL) : 6000 series, TA-29B BOARD (UK MODEL) : 6000 series–

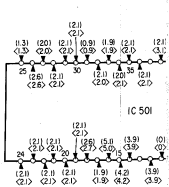
TA-29 A/B BOARD

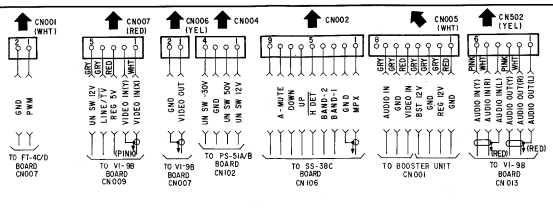
Q, IC	D	ADJ	TP
015 IC001			
002			
003			
IC005			
010			
008			
IC003		502	
			506
707			
706			509
		001	502
			501
IC002		501	
		502	
IC501			
005			
001			
	008		
011 004	005		
IC006	003		
501			
	006		
009	001		
	007		
012	701		
018 502		503	
IC004			507
006 703			
016			
704			
017			
007			511
			510

Q, IC	D	ADJ	TP







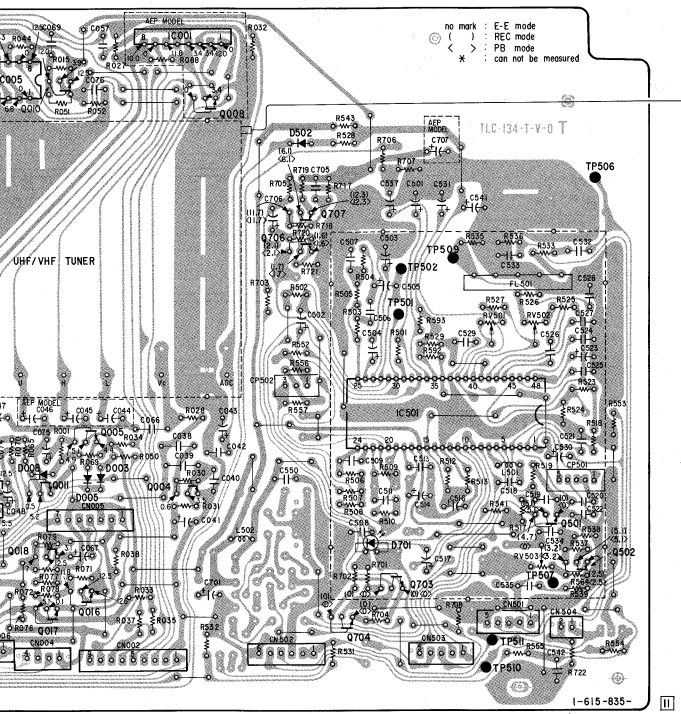


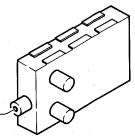
TA-29A BOARD ..... AEP MODEL
TA-29B BOARD ..... UK MODEL

Note

- Dig
wit
Ref
tra

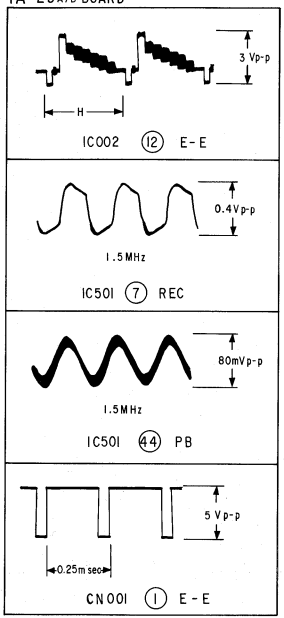
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

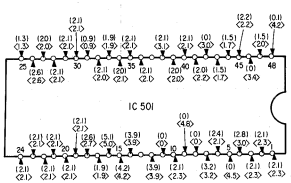




BOOSTER UNIT

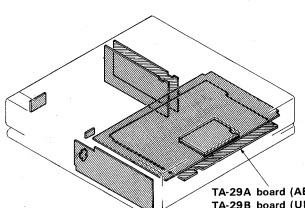
TA-29A/B BOARD





Note (Printed Wiring Boards):

- o— : Indicates a leadwire mounted on the component side.
- —o : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- B - pattern
- Digital transistor (TA-29A/B: Q008, 015, 017, 501) transistor with resistors.
  Refer to the TA-29A/B board schematic diagram for digital transistor.



TA-29A board (AEP model)
TA-29B board (UK model)

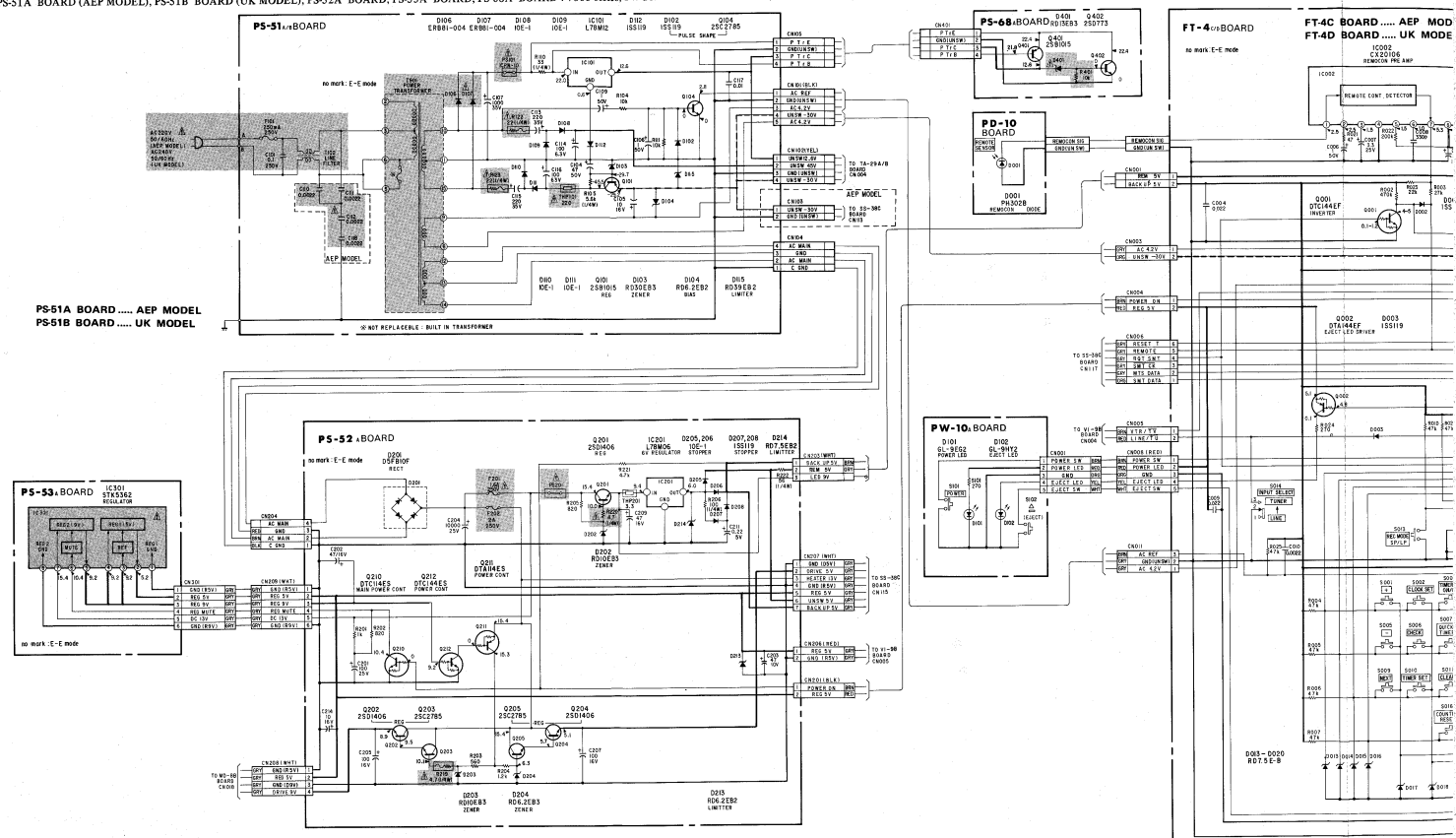
POWER SUPPLY, TIMER POWER

PS-51A/B (POWER) PS-52A (POWER) PS-53A (REGULATOR) PS-68A (REGULATOR) PW-10A (POWER, EJECT SW)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J

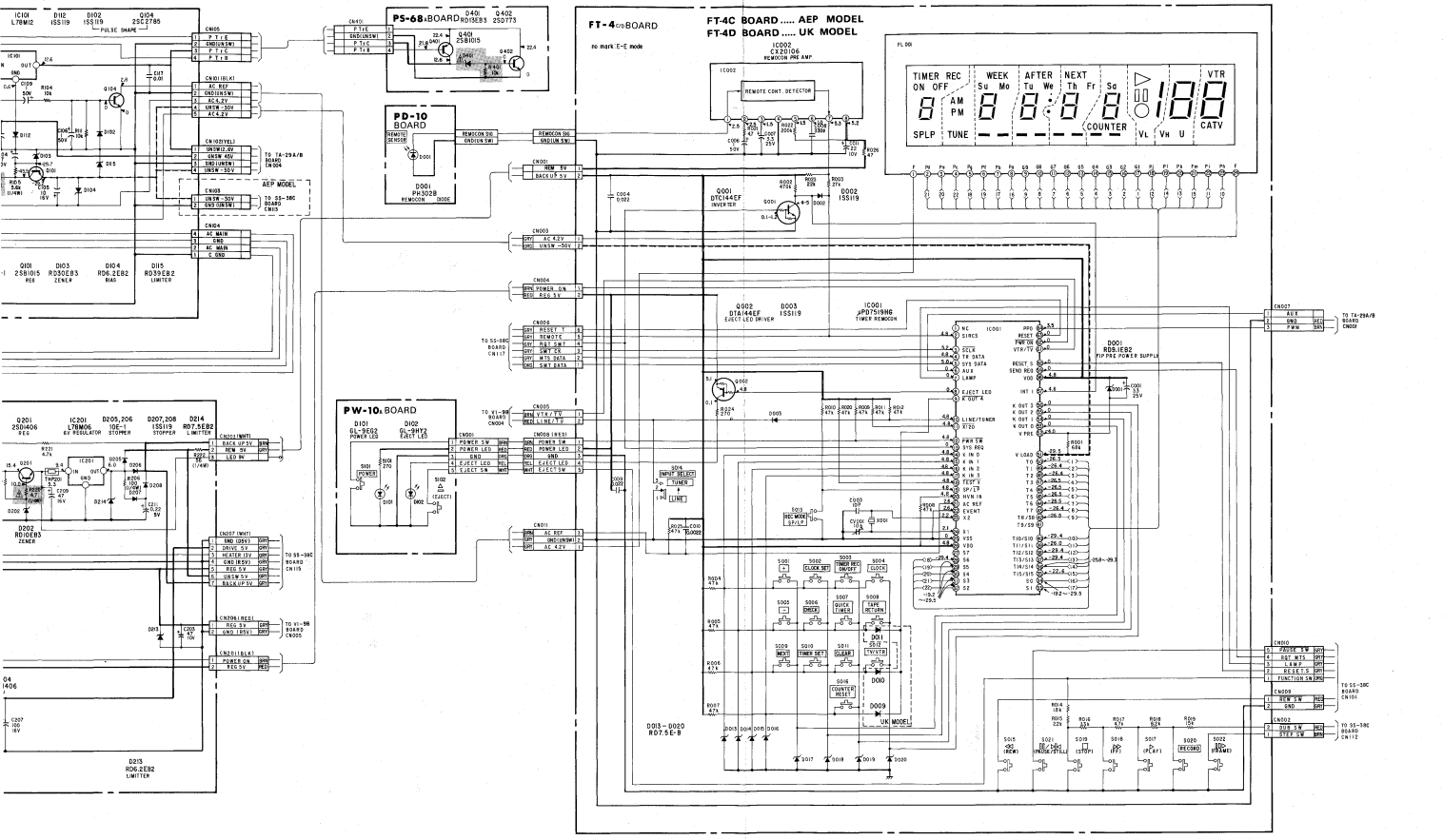
–Ref. No. PS-51A BOARD (AEP MODEL), PS-51B BOARD (UK MODEL), PS-52A BOARD, PS-53A BOARD, PS-68A BOARD : 7000 series, PW-10A BOARD : 7500 series, PD-10 BOARD : 7600 series, FT-4C BOARD (AEP MODEL), FT-4D BOARD (UK MODEL) : 7700 series–



PS-53A (REGULATOR) PS-68A (REGULATOR) PW-10A (POWER, EJECT SW) PD-10 (REMOCON LIGHT RECEPTOR) FT-4C/D (FUNCTION SW) SCHEMATIC DIAGRAMS

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

000 series, PW-10A BOARD : 7500 series, PD-10 BOARD : 7600 series, FT-4C BOARD (AEP MODEL), FT-4D BOARD (UK MODEL) : 7700 series–



PS-51A/B (POWER) **PS-52A** (POWER) **PS-53A** (REGULATOR) **PS-68A** (REGULATOR) **PW-10**

Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

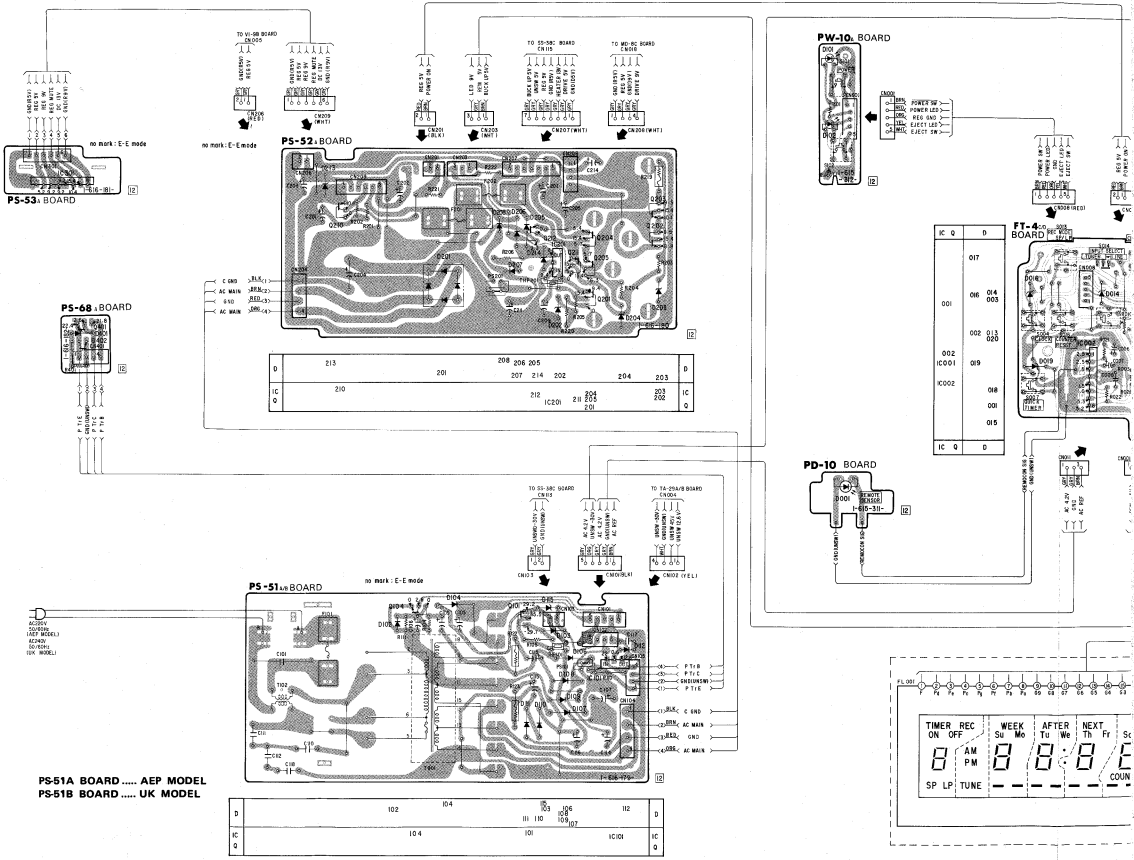
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

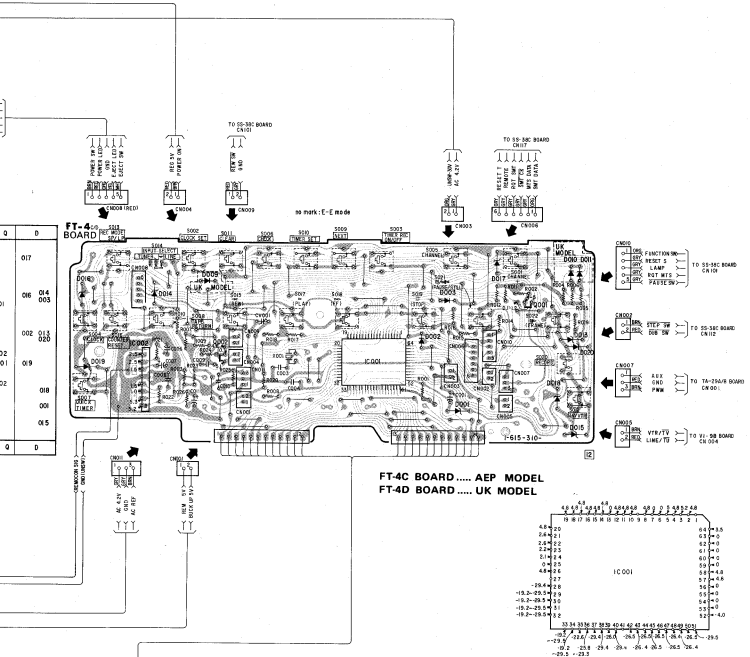
1 2 3 4 5 6 7 8 9 10 11 12 13

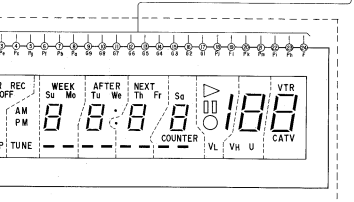
A B C D E F G H I J

– Ref. No. PS-51A BOARD (AEP MODEL), PS-51B BOARD (UK MODEL), PS-52A BOARD, PS-53A BOARD, PS-68A BOARD : 7000 series, PW-10A BOARD : 7500 series, PD-10 BOARD : 7600 series, FT-4C BOARD (AEP MODEL), FT-4D

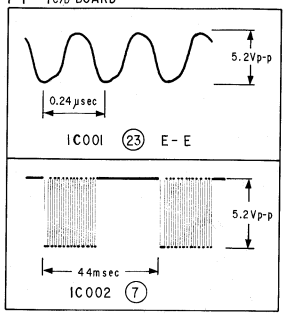


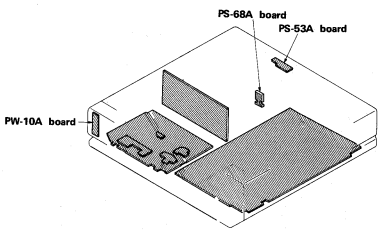
T-4C BOARD (AEP MODEL), FT-4D BOARD (UK MODEL) : 7700 series–

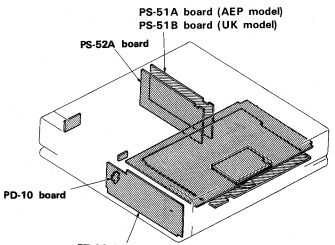




FT-4C/D BOARD





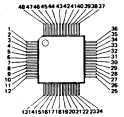


Note (Printed Wiring Boards):

- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- soldering side.
- B + pattern
- B - pattern
- Digital transistor (FT-4C/D: Q001, 002, PS-52A: Q210, 211, 212) transistor with resistors.
  Refer to the FT-4C/D, PS-52A boards schematic diagram for digital transistor.

4-3. SEMICONDUCTORS

CX20034



CX20145
CX22031
CX23042-06
MC140468CP
MC14538BCP
MSM4094RS
TA7607AP
TC40H157P
TC4053BP
TC4526BP

M50761-692P

M50763-633SP

μPC78M12H

μPD7519HG-546

CX20106
M54572L
μPC1391HA

CX23064

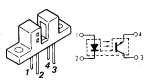
MB3763P
NJM2903D
NJM555D
μPC358C
μPC393C

2SA844
2SC535

CX20130
CX20131
CX20132
CX20137

CXK1001P
TC4011BP
TC4030BP
TC4066BP
TC4069UBP

MB88551-159N



2SA1048-GR
2SC2458
2SC403SP
2SC403SP-3
DTA114ES
DTA124ES
DTA144ES
DTC114ES
DTC124ES
DTC124XS
DTC144ES

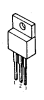
CX20135
CX20136
CX22032

H8D1756

STK5362

CX20144
CX20147

L78M06



μPC574J

2SA1175
2SC2785

2SB733
2SD773
2SD773-4

2SB740

2SB1015
2SD1406

2SC2021
2SC2673
DTA144EF
DTC144EF

2SC2026

2SK105A-30

10E-2

1S1587
RD10EB3
RD13E-B
RD13EB3
RD2.7EL1
RD30EB4
RD39EB2
RD5.1E-B
RD6.2EB1
RD6.2EB2
RD6.2EB3
RD7.5E-B
RD7.5EB2
RD9.1EB2

1SS119

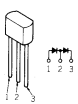
D5FB20F

ERB81-004

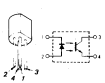
MC911

MC921

MC931



NJL5141E
NJL7141E



PH302B

GL-450

GL-9EG2
GL-9HY2

SLR-932A

SR106C-4

TLR124

NOTE:
- Itmes with
  cription are
  are seldom
- The construc
  part are i
  number in th

5-1. FRONT

No.	Part No
1	*2-352-6
2	3-691-9
3	4-886-8
4	*X-3689-
5	X-3689-
	X-3689-

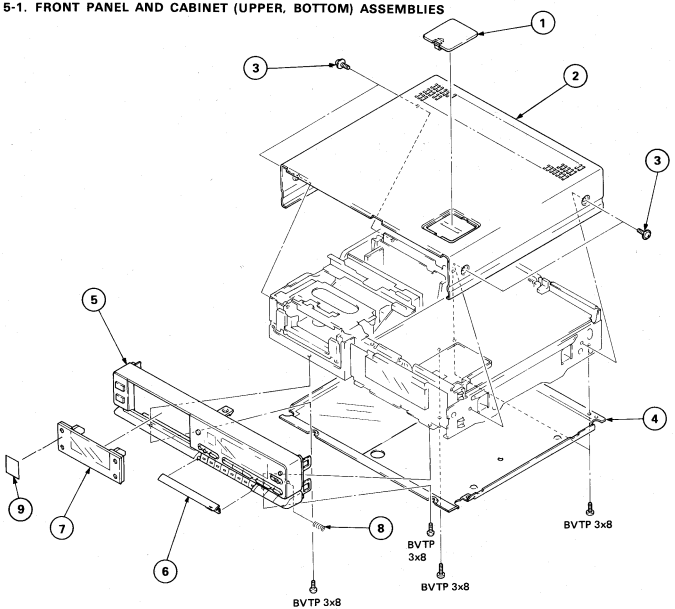
SECTION 5
EXPLODED VIEWS

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

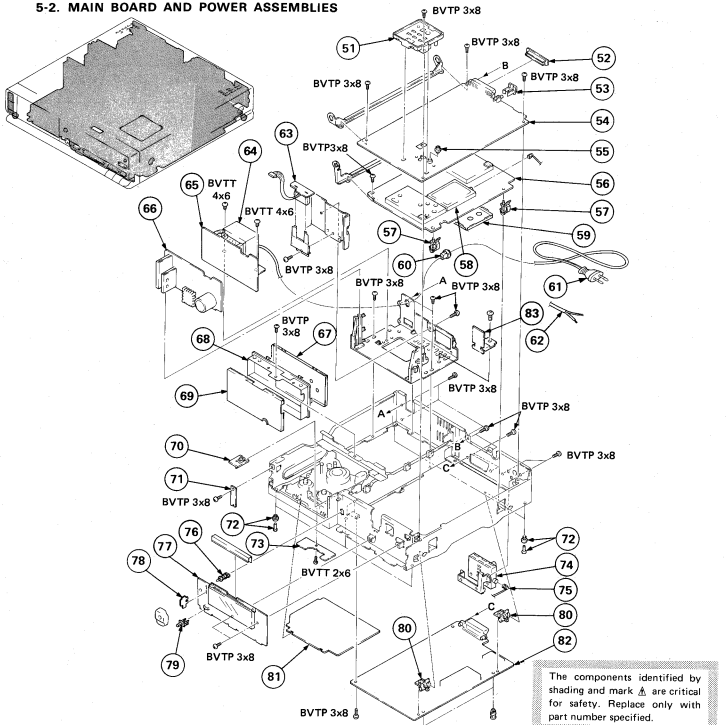
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-1. FRONT PANEL AND CABINET (UPPER, BOTTOM) ASSEMBLIES



No.	Part No.	Description	Remark
1	*2-352-647-01	LID, PRESET	
2	3-691-908-01	CASE, UPPER	
3	4-986-821-01	SCREW, M3 CASE	
4	*X-3689-011-1	PLATE ASSY, BOTTOM	
5	X-3689-024-1	PANEL ASSY, FRONT (AEP MODEL)	
	X-3689-029-1	PANEL ASSY, FRONT (UK MODEL)	
6	3-691-902-01	DOOR, FRONT	
7	X-3689-007-3	LID (L) ASSY	
8	4-869-230-00	SPRING, COMPRESSION	
9	*3-703-713-01	STICKER, SONY SYMBOL (10)	

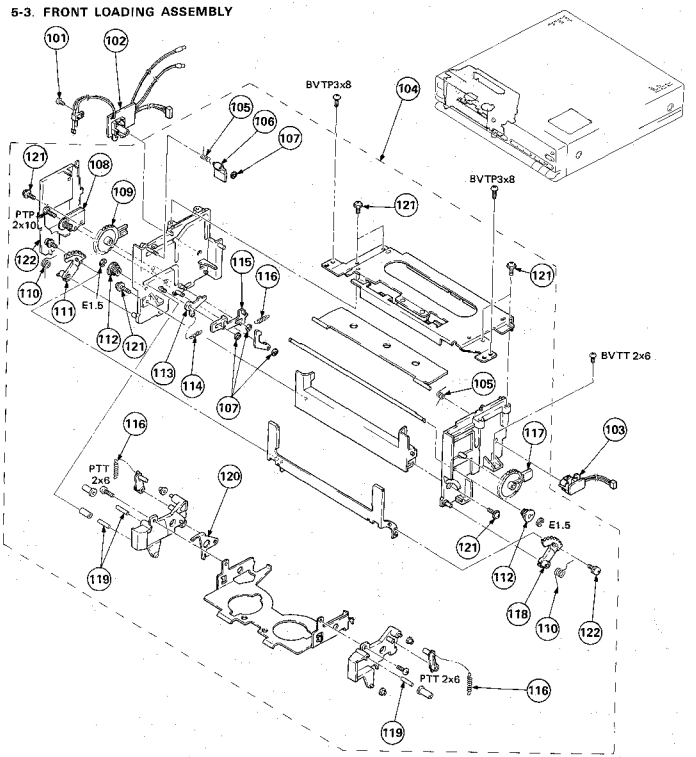
5-2. MAIN BOARD AND POWER ASSEMBLIES



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	X-3689-023-2	KEYBOARD ASSY, PRESET	
52	3-689-085-01	COVER, SOCKET	
53	3-691-912-01	PLATE, ORNAMENTAL, REMOTE	
54	*A-7060-140-A	SS-38C BOARD, COMPLETE	
55	3-691-971-01	KNOB, SHARPNESS	
56	*A-7060-141-A	TA-29A BOARD, COMPLETE (AEP MODEL)	
	*A-7060-164-A	TA-29B BOARD, COMPLETE (UK MODEL)	
57	*3-682-047-01	HOLDER (A), PC BOARD	
58	⚠1-463-677-31	TUNER, ET (BT-883AD) (AEP MODEL)	
	⚠1-463-593-21	TUNER, ET (BT-882AD) (UK MODEL)	
59	*3-689-075-01	LID, REAR SHELD CASE, AE	
60	⚠3-703-244-00	BUSHING (2104), CORD	
61	⚠1-534-817-XX	CORD, POWER (AEP MODEL)	
62	⚠1-551-884-00	CORD, POWER (UK MODEL)	
63	*1-616-181-12	PS-53 BOARD	
64	⚠1-448-179-11	TRANSFORMER, POWER T901	
65	*A-7070-105-A	PS-51A BOARD, COMPLETE (AEP MODEL)	
	*A-7070-122-A	PS-51B BOARD, COMPLETE (UK MODEL)	
66	*A-7070-106-A	PS-52A BOARD, COMPLETE	
67	*3-689-067-01	LID, REAR, SHIELD, RP	
68	*A-7060-064-A	RP-25B BOARD, COMPLETE	
69	*3-689-066-01	LID, SHIELD CASE, RP	
70	*3-691-916-01	COVER, CAP	
71	*1-615-312-11	PW-10 BOARD	
72	3-670-155-11	LEG	
73	*1-615-309-13	RS-11 BOARD	
74	⚠1-464-470-11	BOOSTER MIXER, RF MODULATOR (RFU-830)(UK MODEL)	
	⚠1-464-471-11	BOOSTER MIXER, RF MODULATOR (RFU-831)(AEP MODEL)	
75	*1-555-110-00	CABLE, PIN	
76	*4-303-475-00	HOLDER, P.C	
77	*A-7060-137-A	FT-4C BOARD, COMPLETE (AEP MODEL)	
	*A-7060-165-A	FT-4D BOARD, COMPLETE (UK MODEL)	
78	*1-615-311-11	PD-10 BOARD	
79	3-689-027-01	KNOB, SLIDE	
80	*3-682-613-00	CLIP (C), ANCHOR	
81	*A-7060-138-A	MD-8B BOARD, COMPLETE	
82	*A-7060-139-A	VI-9B BOARD, COMPLETE	
83	*1-616-182-12	PS-68A BOARD	

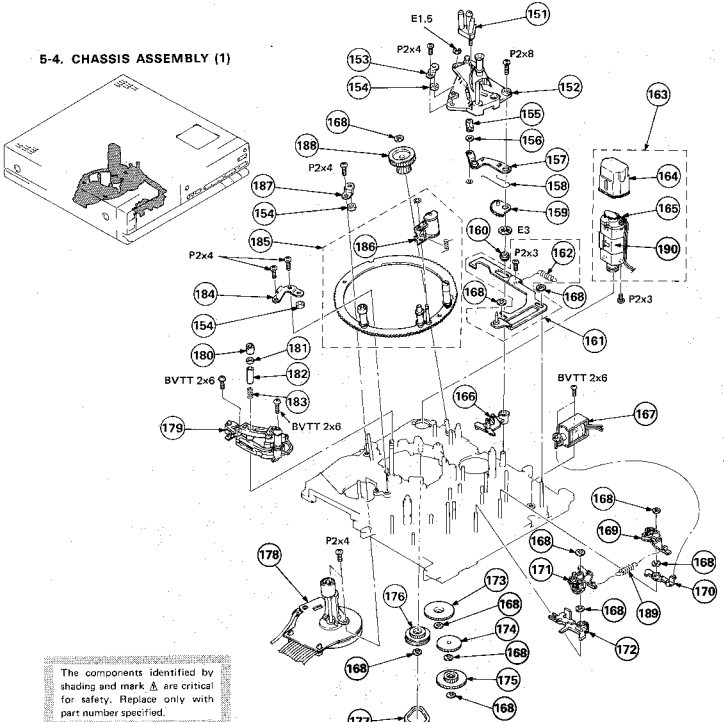
5-3. FRONT LOADING ASSEMBLY



No.	Part No.	Description	Remark
101	3-669-479-11	SCREW (1.4X3.5), TAPPING	
102	*1-615-317-11	TE-2 BOARD	
103	*1-615-316-11	TE-1 BOARD	
104	A-7090-025-F	CASSETTE COMPARTMENT BLOCKASSY	105-122
105	3-689-031-01	SPRING, TORSION	
106	3-689-017-01	LEVER, PUSH	
107	3-669-465-00	WASHER (1.5), STOPPER	
108	3-681-528-11	DAMPER	
109	3-689-005-01	GEAR (LEFT), DRIVING	
110	3-689-015-01	SPRING, TORSION	
111	3-689-051-01	GEAR (LEFT), DOOR	

No.	Part No.	Description	Remark
112	3-689-007-01	GEAR, MIDWAY	
113	3-689-049-01	STOPPER, C.L.	
114	3-689-014-01	SPRING, TENSION	
115	3-689-048-01	SLIDER, C.L.	
116	4-602-490-00	SPRING, TENSION	
117	3-689-006-01	GEAR (RIGHT), DRIVING	
118	3-689-052-01	GEAR (RIGHT), DOOR	
119	3-703-357-06	PIN, PARALLEL (DIA. 1.6X14)	
120	3-689-056-01	PLATE, RELEASE, LOCK, LID	
121	3-669-480-11	+ PTPWH 2	
122	3-669-607-00	+PSW (SMALL ROUND) 2.6	

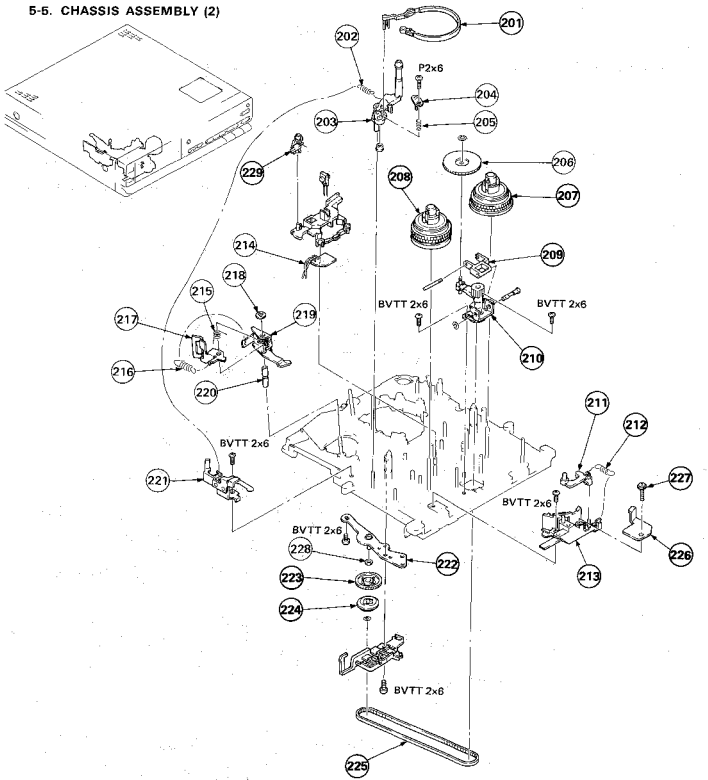
5-4. CHASSIS ASSEMBLY (1)



The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
151	X-3686-502-1	BASE ASSY, GUIDE	
152	X-3686-577-1	CHASSIS ASSY, GUIDE, SLANT	
153	*3-686-503-01	RETAINER, ROLLER	
154	3-686-665-01	ROLLER, RING	
155	3-686-663-01	WASHER, STOPPER, 2 GANG	
156	3-701-436-21	WASHER, POLYEHTHYLENE	
157	X-3686-537-1	ARM ASSY	
158	3-686-701-01	SPRING	
159	X-3686-535-1	GEAR ASSY, SECTOR	
160	3-686-537-01	RETAINER, LOCK SLODER	
161	*A-7040-014-A	SLIDER ASSY, LOCK	162
162	3-686-887-01	SPRING, TENSION	
163	A-7040-030-A	MOTOR ASSY, L MOTOR (M4) (M5)	164, 165, 190
164	*3-686-757-01	CAP, SHIELD, L MOTOR	
165	1-161-073-11	CAP, CERAMIC 0.033MF C90I	
166	*3-686-636-01	ARM, T.S RELEASE	
167	A-7040-027-A	SOLENOID, PLUNGER (M901)	
168	3-669-465-00	WASHER (1.5), STOPPER	
169	X-3686-574-1	BRAKE ASSY, MAIN, TAKE-UP	
170	*3-686-635-01	ARM, P	
171	X-3686-573-1	BRAKE ASSY, MAIN, SUPPLY	
172	*3-686-629-01	SLIDER, SELECTION, UPPER & LOWER	
173	3-686-509-01	GEAR, NO.2	
174	3-686-545-01	GEAR, NO.3	
175	3-686-544-01	GEAR, NO.4	
176	X-3686-514-1	GEAR ASSY, NO.1	
177	3-685-546-01	BELT, L- MOTOR	
178	8-838-094-01	MOTOR, DC (BHF-2800C)(CAPSTAN) M901	
179	A-7040-024-A	GUIDE (P) ASSY, ENTRANCE	
180	3-686-724-01	NUT, GUIDE	
181	*3-686-894-01	FLANGE, #3 #4 GUIDE	
182	3-686-912-01	GUIDE, #3 #4	
183	3-669-666-00	SPRING, COMPRESSION	
184	*3-686-675-01	STOPPER, RING	
185	A-7040-007-A	RING ASSY, LOADING	186
186	X-3686-576-1	ARM ASSY, PINCH ROLLER	
187	*3-686-911-01	PLATE, TOP, ROLLER	
188	3-697-518-01	GEAR, NO.10	
189	3-686-882-01	SPRING, TENSION	
190	3-691-920-01	PLATE, SHIELD, L.MOTOR	

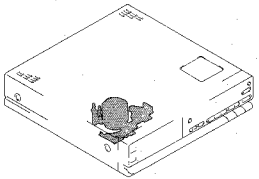
5-5. CHASSIS ASSEMBLY (2)

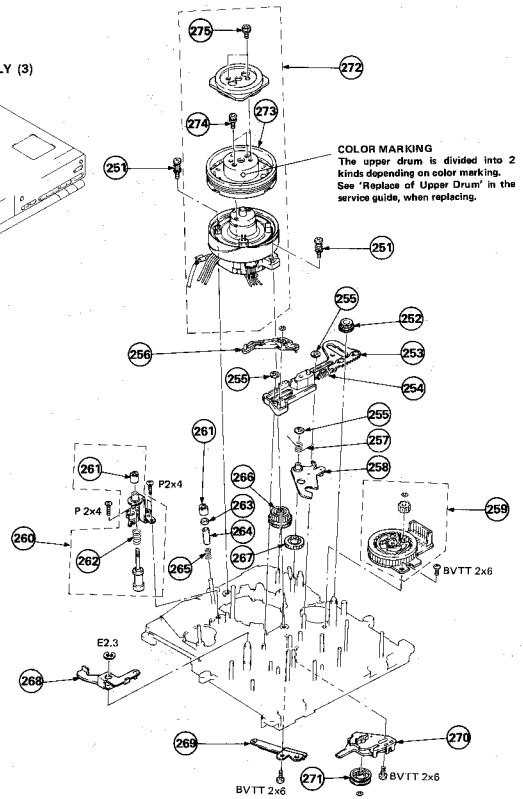


No.	Part No.	Description	Remark
201	X-3686-531-1	BAND ASSY, TENSION REGULATOR	
202	3-686-918-01	SPRING, TENSION	
203	X-3686-532-5	ARM SUB ASSY, TENSION REGULATOR	
204	*X-3686-523-1	PLATE ASSY, TENSION REGULATOR	
205	3-669-666-00	SPRING, COMPRESSION	
206	X-3686-526-1	GEAR (B) ASSY, DRIVING	
207	X-3686-572-2	TABLE ASST, REEL, TAKE-UP	
208	X-3686-571-2	TABLE ASST, REEL, SUPPLY	
209	*3-686-630-01	ARM(B), SELECTION, UPPER & LOWER	
210	X-3686-581-1	ARM COMPLETE ASSY, DRIVING	209
211	*3-686-637-01	BRAKE (S), SOFT	
212	3-696-082-01	SPRING, TENSION	
213	*3-686-760-01	GUIDE, BAND	
214	*1-613-367-11	LD-1 BOARD	
215	3-686-568-01	SPRING, TORSION	

No.	Part No.	Description	Remark
216	3-686-885-01	SPRING, TENSION	
217	*3-686-641-01	ARM, PINCH PRESS	
218	3-669-465-00	WASHER (1.5), STOPPER	
219	*3-686-660-01	ARM, PINCH LIMITER	
220	*3-686-567-01	SLEEVE, PINCH PRESS	
221	*X-3686-525-1	HOOK ASSY, SPRING	
222	*X-3686-529-1	BASE ASSY, CHANGE GEAR	
223	X-3686-520-1	GEAR ASSY, CHANGE	
224	*3-686-596-01	FLANGE, GEAR	
225	3-686-646-01	BELT, TIMING	
226	*3-686-991-01	STOPPER, REEL TABLE	
227	3-669-480-11	+ PTPWH 2	
228	3-701-436-11	WASHER, 1.6	
229	X-3686-590-1	BRAKE ASSY, REV	

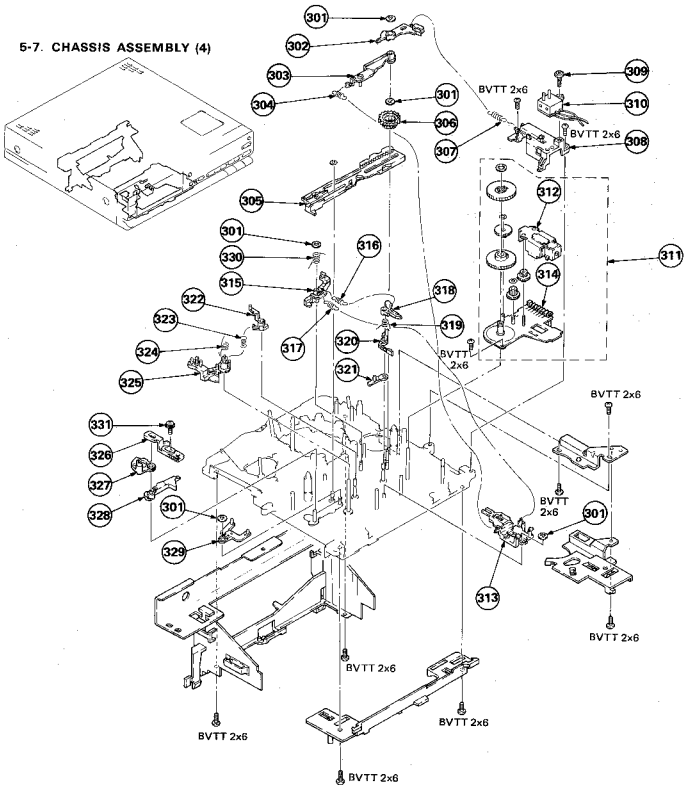
5-6. CHASSIS ASSEMBLY (3)




COLOR MARKING
The upper drum is divided into 2 kinds depending on color marking. See 'Replace of Upper Drum' in the service guide, when replacing.
P2x4
P 2x4
E2.3
BVTT 2x6
BVTT 2x6

No.	Part No.	Description	Remark
251	X-3686-569-1	SCREW ASSY, FITTING	
252	3-686-702-01	GEAR, DRIVING, GUIDE, SLANT	
253	*X-3686-548-2	SLIDER SUB ASSY, L	
254	3-686-886-01	SPRING, TENSION	
255	3-669-465-00	WASHER (1.5), STOPPER	
256	*X-3686-518-1	ARM ASSY	
257	3-686-540-01	SPRING, TORSION	
258	X-3686-579-1	CHANGE ASSY, DRIVE	
259	X-3686-549-1	L-SW ASSY	
260	A-7040-011-A	GUIDE BLOCK COMPLETE ASSY, #5	261, 262
261	3-686-724-01	NUT, GUIDE	
262	3-686-889-01	SPRING, COMPRESSION	
263	*3-686-894-01	FLANGE, #3 #4 GUIDE	
264	3-686-912-01	GUIDE, #3 #4	
265	3-669-666-00	SPRING, COMPRESSION	
266	3-686-539-01	GEAR, NO.9	
267	3-686-535-01	GEAR, NO.8	
268	*X-3686-509-1	LEVER ASSY, PINCH PRESS	
269	1-535-535-11	TERMINAL, SHAFT GROUND	
270	X-3686-521-1	BASE ASSY, IDLER	
271	X-3686-522-1	IDLER ASSY	
272	A-7048-015-A	DRUM ASSY (DVH-04A-R)	273, 274, 275
273	A-7049-021-A	DRUM ASSY, UPPER (DVR-04-R) MARKING; RED OR BLUE	
	A-7049-022-A	DRUM ASSY, UPPER (DVR-04-R-(O)) MARKING; BLACK OR GREEN	
274	3-686-403-01	BOLT (WASHER)(2X5)	
275	3-686-422-01	BOLT (WASHER)(2X2.7)	

5-7. CHASSIS ASSEMBLY (4)



No.	Part No.	Description	Remark
301	3-669-465-00	WASHER (1.5), STOPPER	
302	X-3686-511-1	BRAKE ASSY, T.S	
303	*X-3686-528-1	ARM ASSY, B RELEASE	
304	3-686-903-01	SPRING, TENSION	
305	*3-686-657-08	SLIDER, M	
306	3-686-909-01	GEAR, MODE OUTPUT	
307	3-686-907-01	SPRING, TENSION	
308	*3-686-759-01	COVER, CONTROL MOTOR	
309	3-669-480-11	+ PTPWH 2	
310	1-554-942-11	SWITCH, PUSH S901	
311	A-7090-029-A	M-SW ASSY	312, 314
312	8-835-110-01	MOTOR, DC (DNR-5301A)(CONTROL) M903	
313	*3-686-656-01	SLIDER, B RELEASE	
314	*A-7070-055-A	MS-4 BOARD, COMPLETE	
315	*3-686-634-01	ARM, RL	
316	3-686-906-01	SPRING, TENSION	

No.	Part No.	Description	Remark
317	3-686-904-01	SPRING, TENSION	
318	X-3686-510-1	BRAKE ASSY, REW	
319	3-686-617-01	SPRING	
320	*3-686-638-01	ARM, RVS	
321	*3-686-580-01	ARM, SET UP	
322	3-686-596-01	BRAKE (S), HARD	
323	3-686-905-02	SPRING, TENSION	
324	3-686-603-01	SPRING	
325	*3-686-644-01	ARM, BAND	
326	*3-686-642-01	PLATE, ADJUSTMENT, BAND	
327	*3-686-755-01	DISK, EJECT	
328	*3-686-643-01	ARM, MODE	
329	*X-3686-530-1	ARM (A) ASSY, SELECTION	
330	3-686-579-01	SPRING	
331	3-686-528-01	SCREW (2X6), +	

5-8. HEADWARE LIST

SCREW

7-621-255-20	SCREW +P 2X4
7-621-255-50	SCREW +P 2X8
7-627-553-38	SCREW, PRECISION +P 2x3
7-627-553-48	SCREW, PRECISION +P 2X4
7-627-553-68	SCREW, PRECISION +P 2X6
7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT
7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-81	SCREW +BVTP 3X8 TYPE2
7-685-780-01	SCREW +PTT 2X3 (S)
7-685-783-09	SCREW +PTT 2X6 (S)
7-685-853-01	SCREW +BVTT 2X6 (S)
7-685-880-01	SCREW +BVTT 4X6 (S)

STOP RING

7-624-102-04	STOP RING 1.5, TYPE -E
7-624-105-04	STOP RING 2.3, TYPE -E
7-624-106-04	STOP RING 3.0, TYPE -E

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
	*A-7060-064-A	RP-25B BOARD, COMPLETE **********			
	*3-689-065-01	CASE (MAIN), SHIELD, RP			
	*3-689-067-01	LID, REAR, SHIELD CASE, RP			
		CAPACITOR			
C001	1-161-025-00	CERAMIC	0.1MF	10% 25V	
C002	1-123-618-00	ELECT	22MF	20% 6.3V	
C003	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C004	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C005	1-123-618-00	ELECT	22MF	20% 6.3V	
C006	1-123-618-00	ELECT	22MF	20% 6.3V	
C007	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C009	1-101-884-00	CERAMIC	56PF	5% 50V	
C010	1-102-816-00	CERAMIC	120PF	5% 50V	
C011	1-102-973-00	CERAMIC	100PF	5% 50V	
C012	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C013	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C014	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C015	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C016	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C017	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C018	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C019	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C020	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C021	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C024	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C025	1-123-611-00	ELECT	1MF	20% 50V	
C026	1-102-129-00	CERAMIC	0.01MF	10% 50V	
C027	1-102-965-00	CERAMIC	39PF	5% 50V	
C028	1-102-965-00	CERAMIC	39PF	5% 50V	
C029	1-102-129-00	CERAMIC	0.01MF	10% 50V	
C030	1-102-973-00	CERAMIC	100PF	5% 50V	
C032	1-123-618-00	ELECT	22MF	20% 6.3V	
C033	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C036	1-123-611-00	ELECT	1MF	20% 50V	
C042	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C043	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C044	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C045	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C050	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C051	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C053	1-161-025-00	CERAMIC	0.1MF	10% 25V	
C054	1-161-025-00	CERAMIC	0.1MF	10% 25V	
C200	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C202	1-123-647-00	ELECT	47MF	20% 6.3V	
C203	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C204	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C205	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C206	1-123-618-00	ELECT	22MF	20% 6.3V	
C207	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C208	1-102-963-00	CERAMIC	33PF	5% 50V	

Ref.No	Part No.	Description			Remark
C209	1-123-617-00	ELECT	10MF	20% 16V	
C210	1-123-618-00	ELECT	22MF	20% 6.3V	
C211	1-161-059-00	CERAMIC	0.047MF	10% 25V	
C212	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C213	1-161-013-00	CERAMIC	0.01MF	10% 25V	
C214	1-161-013-00	CERAMIC	0.01MF	10% 25V	
		CONNECTOR			
CN001	*1-560-896-00	PIN, CONNECTOR 8P			
CN002	*1-560-895-00	PIN, CONNECTOR 7P			
CN003	*1-564-008-00	PIN, CONNECTOR 9P			
CN004	*1-560-890-00	PIN, CONNECTOR 2P			
CN005	*1-564-002-00	PIN, CONNECTOR 3P			
CN006	*1-564-031-00	PIN, CONNECTOR 6P			
		IC			
IC001	8-752-003-40	IC CX20034			
		COIL			
L001	1-408-409-00	MICRO INDUCTOR 10UH			
L002	1-408-423-00	MICRO INDUCTOR 150UH			
L003	1-408-413-00	MICRO INDUCTOR 22UH			
L004	1-408-413-00	MICRO INDUCTOR 22UH			
L005	1-408-409-00	MICRO INDUCTOR 10UH			
L006	1-408-411-00	MICRO INDUCTOR 15UH			
L007	1-408-411-00	MICRO INDUCTOR 15UH			
L008	1-408-413-00	MICRO INDUCTOR 22UH			
L201	1-408-413-00	MICRO INDUCTOR 22UH			
L202	1-408-411-00	MICRO INDUCTOR 15UH			
L203	1-408-876-00	MICRO INDUCTOR 0.18UH			
		TRANSISTOR			
Q001	8-729-117-54	TRANSISTOR 2SA1175			
Q002	8-729-117-54	TRANSISTOR 2SA1175			
Q200	8-729-353-52	TRANSISTOR 2SC535			
Q201	8-729-603-50	TRANSISTOR 2SC4035P			
Q202	8-729-603-50	TRANSISTOR 2SC4035P			
Q203	8-729-603-50	TRANSISTOR 2SC4035P			
Q204	8-729-603-50	TRANSISTOR 2SC4035P			
Q205	8-729-245-83	TRANSISTOR 2SC2458			
Q206	8-729-245-83	TRANSISTOR 2SC2458			
Q207	8-729-900-36	TRANSISTOR DTC124ES			
Q208	8-729-900-63	TRANSISTOR DTA124ES			
Q213	8-729-245-83	TRANSISTOR 2SC2458			
Q214	8-729-900-65	TRANSISTOR DTA144ES			
Q215	8-729-900-83	TRANSISTOR DTC124XS			
		RESISTOR			
R001	1-247-861-00	CARBON	18K	5% 1/6W	
R002	1-247-863-00	CARBON	22K	5% 1/6W	
R003	1-247-863-00	CARBON	22K	5% 1/6W	
R004	1-247-863-00	CARBON	22K	5% 1/6W	

RP-25B FT-4C/D

Ref.No	Part No.	Description				Remark
R005	1-247-837-00	CARBON	1.8K	5%	1/6W	
R006	1-249-437-11	CARBON	47K	5%	1/6W	
R009	1-247-863-00	CARBON	22K	5%	1/6W	
R010	1-247-863-00	CARBON	22K	5%	1/6W	
R011	1-247-863-00	CARBON	22K	5%	1/6W	
R012	1-247-861-00	CARBON	18K	5%	1/6W	
R013	1-247-837-00	CARBON	1.8K	5%	1/6W	
R014	1-249-437-11	CARBON	47K	5%	1/6W	
R015	1-247-863-00	CARBON	22K	5%	1/6W	
R016	1-247-863-00	CARBON	22K	5%	1/6W	
R017	1-249-419-11	CARBON	1.5K	5%	1/6W	
R018	1-249-419-11	CARBON	1.5K	5%	1/6W	
R019	1-247-863-00	CARBON	22K	5%	1/6W	
R020	1-249-434-11	CARBON	27K	5%	1/6W	
R021	1-247-813-00	CARBON	180	5%	1/6W	
R022	1-247-807-00	CARBON	100	5%	1/6W	
R023	1-247-807-00	CARBON	100	5%	1/6W	
R029	1-249-429-11	CARBON	10K	5%	1/6W	
R036	1-247-777-00	CARBON	5.6	5%	1/6W	
R037	1-247-863-00	CARBON	22K	5%	1/6W	
R038	1-247-863-00	CARBON	22K	5%	1/6W	
R039	1-247-821-00	CARBON	390	5%	1/6W	
R052	1-247-863-00	CARBON	22K	5%	1/6W	
R053	1-247-807-00	CARBON	100	5%	1/6W	
R054	1-247-827-00	CARBON	680	5%	1/6W	
R056	1-247-823-00	CARBON	470	5%	1/6W	
R200	1-247-853-00	CARBON	8.2K	5%	1/6W	
R201	1-247-841-00	CARBON	2.7K	5%	1/6W	
R202	1-247-811-00	CARBON	150	5%	1/6W	
R203	1-247-831-00	CARBON	1K	5%	1/6W	
R204	1-247-845-00	CARBON	3.9K	5%	1/6W	
R205	1-247-823-00	CARBON	470	5%	1/6W	
R206	1-247-837-00	CARBON	1.8K	5%	1/6W	
R207	1-247-831-00	CARBON	1K	5%	1/6W	
R208	1-247-833-00	CARBON	1.2K	5%	1/6W	
R209	1-249-419-11	CARBON	1.5K	5%	1/6W	
R210	1-247-807-00	CARBON	100	5%	1/6W	
R211	1-247-831-00	CARBON	1K	5%	1/6W	
R212	1-247-867-00	CARBON	33K	5%	1/6W	
R213	1-247-859-00	CARBON	15K	5%	1/6W	
R214	1-247-825-00	CARBON	560	5%	1/6W	
R215	1-247-821-00	CARBON	390	5%	1/6W	
R216	1-247-823-00	CARBON	470	5%	1/6W	
R219	1-247-823-00	CARBON	470	5%	1/6W	
R301	1-247-807-00	CARBON	100	5%	1/6W	

VARIABLE RESISTOR

RV001	1-228-920-00	RES, ADJ, CARBON 2.2K	
RV002	1-228-920-00	RES, ADJ, CARBON 2.2K	
RV003	1-228-994-00	RES, ADJ, CARBON 10K	
RV005	1-228-994-00	RES, ADJ, CARBON 10K	
RV200	1-228-920-00	RES, ADJ, CARBON 2.2K	

Ref.No	Part No.	Description				Remark
	*A-7060-137-A	FT-4C BOARD, COMPLETE (AEP MODEL)				
		**********				
	*A-7060-165-A	FT-4D BOARD, COMPLETE (UK MODEL)				
		**********				
	1-519-348-11	INDICATOR TUBE, FLUORESCENT (AEP MODEL)				
	*3-689-044-01	CASE, SHIELD, IC				
		CAPACITOR				
C001	1-124-258-00	ELECT	3.3MF	20%	25V	
C003	1-102-508-00	CERAMIC	10PF	0.5PF	50V	
C004	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C006	1-124-255-00	ELECT	1MF	20%	50V	
C007	1-124-258-00	ELECT	3.3MF	20%	25V	
C008	1-102-112-00	CERAMIC	330PF	10%	50V	
C009	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C010	1-161-043-00	CERAMIC	0.0022MF	10%	25V	
C011	1-124-234-00	ELECT	22MF	20%	10V	
		CONNECTOR				
CN008	*1-564-015-00	PIN, CONNECTOR 5P				
		TRIMMER				
CV001	1-141-294-11	CAP, TRIMMER				
		DIODE				
D001	8-719-100-54	DIODE RD9.1E82				
D002	8-719-911-19	DIODE 1SS119				
D003	8-719-911-19	DIODE 1SS119				
D009	8-719-911-19	DIODE 1SS119 (UK MODEL)				
D010	8-719-911-19	DIODE 1SS119 (UK MODEL)				
D011	8-719-911-19	DIODE 1SS119 (UK MODEL)				
D013	8-719-175-07	DIODE RD7.5E-B				
D014	8-719-175-07	DIODE RD7.5E-B				
D015	8-719-175-07	DIODE RD7.5E-B				
D016	8-719-175-07	DIODE RD7.5E-B				
D017	8-719-175-07	DIODE RD7.5E-B				
D018	8-719-175-07	DIODE RD7.5E-B				
D019	8-719-175-07	DIODE RD7.5E-B				
D020	8-719-175-07	DIODE RD7.5E-B				
		INDICATOR TUBE				
FL001	1-519-348-11	INDICATOR TUBE, FLUORESCENT				
		IC				
IC001	8-759-103-33	IC UPD7519HG-546				
IC002	8-752-010-60	IC CX20106				
		TRANSISTOR				
Q001	8-729-900-33	TRANSISTOR DTC144EF				
Q002	8-729-900-30	TRANSISTOR DTA144EF				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
		RESISTOR			
R001	1-247-875-00	CARBON	68K	5% 1/6W	
R002	1-247-895-00	CARBON	470K	5% 1/6W	
R003	1-249-434-11	CARBON	27K	5% 1/6W	
R004	1-249-437-11	CARBON	47K	5% 1/6W	
R005	1-249-437-11	CARBON	47K	5% 1/6W	
R006	1-249-437-11	CARBON	47K	5% 1/6W	
R007	1-249-437-11	CARBON	47K	5% 1/6W	
R008	1-249-437-11	CARBON	47K	5% 1/6W	
R009	1-249-437-11	CARBON	47K	5% 1/6W	
R010	1-249-437-11	CARBON	47K	5% 1/6W	
R011	1-249-437-11	CARBON	47K	5% 1/6W	
R012	1-249-437-11	CARBON	47K	5% 1/6W	
R014	1-247-837-00	CARBON	1.8K	5% 1/6W	
R015	1-249-421-11	CARBON	2.2K	5% 1/6W	
R016	1-247-843-00	CARBON	3.3K	5% 1/6W	
R017	1-247-847-00	CARBON	4.7K	5% 1/6W	
R018	1-247-853-00	CARBON	8.2K	5% 1/6W	
R019	1-247-859-00	CARBON	15K	5% 1/6W	
R020	1-249-437-11	CARBON	47K	5% 1/6W	
R021	1-247-775-00	CARBON	4.7	5% 1/6W	
R022	1-215-676-00	METAL	200K	1% 1/6W	
R023	1-247-863-00	CARBON	22K	5% 1/6W	
R024	1-247-817-00	CARBON	270	5% 1/6W	
R025	1-249-437-11	CARBON	47K	5% 1/6W	
R026	1-247-799-00	CARBON	47	5% 1/6W	
		SWITCH			
S001	1-554-174-00	SWITCH, KEY BOARD (+)			
S002	1-554-174-00	SWITCH, KEY BOARD (CLOCK SET)			
S003	1-554-174-00	SWITCH, KEY BOARD (TIMER REC ON/OFF)			
S004	1-554-174-00	SWITCH, KEY BOARD (CLOCK)			
S005	1-554-174-00	SWITCH, KEY BOARD (-)			
S006	1-554-174-00	SWITCH, KEY BOARD (CHECK)			
S007	1-554-174-00	SWITCH, KEY BOARD (QUICK TIMER)			
S008	1-554-174-00	SWITCH, KEY BOARD (TAPE RETURN)			
S009	1-554-174-00	SWITCH, KEY BOARD (NEXT)			
S010	1-554-174-00	SWITCH, KEY BOARD (TIMER SET)			
S011	1-554-174-00	SWITCH, KEY BOARD (CLEAR)			
S012	1-554-174-00	SWITCH, KEY BOARD (TV/VTR)			
S013	1-554-174-00	SWITCH, KEY BOARD (SP/LP)			
S014	1-553-716-00	SWITCH, SLIDE	(INPUT SELECT)		
S015	1-554-174-00	SWITCH, KEY BOARD (REW)			
S016	1-554-174-00	SWITCH, KEY BOARD (COUNTER RESET)			
S017	1-554-174-00	SWITCH, KEY BOARD (PLAY)			
S018	1-554-174-00	SWITCH, KEY BOARD (FF)			
S019	1-554-174-00	SWITCH, KEY BOARD (STOP)			
S020	1-554-088-00	SWITCH, KEY BOARD (RECORD)			
S021	1-554-174-00	SWITCH, KEY BOARD (PAUSE/STILL)			
S022	1-554-174-00	SWITCH, KEY BOARD (FRAME)			

Ref.No	Part No.	Description			Remark
		CRYSTAL			
X001	1-567-121-00	VIBRATOR, CRYSTAL			
**********					
	*1-615-311-11	PD-10 BOARD **********			
		DIODE			
D201	8-719-110-32	DIODE PH302B			
**********					
	*A-7060-138-A	MD-8B BOARD, COMPLETE **********			
		CAPACITOR			
C001	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C002	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C003	1-161-974-00	CERAMIC	0.1MF	20% 16V	
C004	1-123-380-00	ELECT	1MF	20% 50V	
C005	1-123-382-00	ELECT	3.3MF	20% 50V	
C007	1-123-380-00	ELECT	1MF	20% 50V	
C008	1-123-380-00	ELECT	1MF	20% 50V	
C009	1-123-379-00	ELECT	0.47MF	20% 50V	
C010	1-123-318-00	ELECT	33MF	20% 10V	
C011	1-123-318-00	ELECT	33MF	20% 10V	
C012	1-123-318-00	ELECT	33MF	20% 10V	
C013	1-123-329-51	ELECT	10MF	20% 25V	
C014	1-123-329-51	ELECT	10MF	20% 25V	
C015	1-123-329-51	ELECT	10MF	20% 25V	
C016	1-123-329-51	ELECT	10MF	20% 25V	
C017	1-123-608-00	ELECT	0.22MF	20% 50V	
C018	1-123-329-51	ELECT	10MF	20% 25V	
C019	1-124-271-00	ELECT	1MF	20% 50V	
C101	1-123-306-00	ELECT	47MF	20% 10V	
C102	1-162-306-31	CERAMIC	0.01MF	20% 16V	
		CONNECTOR			
CN001	*1-564-003-00	PIN, CONNECTOR 4P			
CN002	*1-564-003-00	PIN, CONNECTOR 4P			
CN003	*1-564-003-00	PIN, CONNECTOR 4P			
CN008	*1-564-010-11	PIN, CONNECTOR 11P			
CN009	*1-564-001-11	PIN, CONNECTOR 2P			
CN013	*1-564-002-00	PIN, CONNECTOR 3P			
CN014	*1-564-002-00	PIN, CONNECTOR 3P			
CN015	*1-564-001-11	PIN, CONNECTOR 2P			
CN020	*1-564-004-00	PIN, CONNECTOR 5P			
CN025	*1-564-001-11	PIN, CONNECTOR 2P			
CN050	*1-564-005-00	PIN, CONNECTOR 6P			
		DIODE			
D001	8-719-200-02	DIODE 10E-2			

When indicating parts by reference number, please include the board name.

MD-8B | VI-9B

Ref.No	Part No.	Description	Remark
		IC	
IC001	8-752-013-60	IC CX20136	
IC002	8-759-202-69	IC CX20144	
IC003	8-759-102-97	IC CX20145	
IC004	8-759-135-80	IC UPC358C	
IC101	8-759-240-69	IC TC4069UBP	
		IC LINK	
PS001,I-532-675-00		LINK, IC	
PS002,I-532-675-00		LINK, IC	
PS003,I-532-675-00		LINK, IC	
		TRANSISTOR	
Q001	8-729-902-11	TRANSISTOR 2SC2021	
Q002	8-729-201-78	TRANSISTOR 2SD1406-Y	
Q003	8-729-902-11	TRANSISTOR 2SC2021-R	
Q004	8-729-201-78	TRANSISTOR 2SD1406-Y	
Q005	8-729-900-65	TRANSISTOR DTA144ES	
Q100	8-729-900-33	TRANSISTOR DTC144EF	
Q101	8-729-374-02	TRANSISTOR 2SB740	
Q103	8-729-117-54	TRANSISTOR 2SA1175	
Q104	8-729-117-54	TRANSISTOR 2SA1175	
Q105	8-729-900-33	TRANSISTOR DTC144EF	
Q106	8-729-900-33	TRANSISTOR DTC144EF	
Q107	8-729-900-33	TRANSISTOR DTC144EF	
Q108	8-729-117-54	TRANSISTOR 2SA1175	
		RESISTOR	
R001	1-247-845-00	CARBON 3.9K 5% 1/6W	
R002	1-249-421-11	CARBON 2.2K 5% 1/6W	
R004	1-247-895-00	CARBON 470K 5% 1/6W	
R006	1-247-831-00	CARBON 1K 5% 1/6W	
R007	1-249-447-11	CARBON 1 5% 1/4W	
R008	1-247-851-00	CARBON 6.8K 5% 1/6W	
R010	1-247-883-00	CARBON 150K 5% 1/6W	
R011	1-247-847-00	CARBON 4.7K 5% 1/6W	
R013	1-247-863-00	CARBON 22K 5% 1/6W	
R015	1-249-429-11	CARBON 10K 5% 1/6W	
R016	1-247-831-00	CARBON 1K 5% 1/6W	
R017	1-249-429-11	CARBON 10K 5% 1/6W	
R018	1-247-771-00	CARBON 3.3 5% 1/6W	
R019	1-247-771-00	CARBON 3.3 5% 1/6W	
R020	1-247-771-00	CARBON 3.3 5% 1/6W	
R022	1-247-869-00	CARBON 39K 5% 1/6W	
R023	1-249-447-11	CARBON 1 5% 1/4W	
R024	1-247-863-00	CARBON 22K 5% 1/6W	
R025	1-247-863-00	CARBON 22K 5% 1/6W	
R028	1-247-815-00	CARBON 220 5% 1/6W	
R030	1-249-429-11	CARBON 10K 5% 1/6W	
R100	1-249-429-11	CARBON 10K 5% 1/6W	
R101	1-249-429-11	CARBON 10K 5% 1/6W	
R102	1-249-429-11	CARBON 10K 5% 1/6W	
R103	1-247-862-00	CARBON 20K 5% 1/6W	

Ref.No	Part No.	Description	Remark
R104	1-247-833-00	CARBON 1.2K 5% 1/6W	
R105	1-249-429-11	CARBON 10K 5% 1/6W	
R106	1-249-429-11	CARBON 10K 5% 1/6W	
R107	1-249-447-11	CARBON 1 5% 1/4W	
R108	1-247-862-00	CARBON 20K 5% 1/6W	
R109	1-247-862-00	CARBON 20K 5% 1/6W	
R110	1-247-862-00	CARBON 20K 5% 1/6W	
R111	1-249-437-11	CARBON 47K 5% 1/6W	
R112	1-247-863-00	CARBON 22K 5% 1/6W	
R113	1-249-429-11	CARBON 10K 5% 1/6W	
R114	1-249-429-11	CARBON 10K 5% 1/6W	
R115	1-249-429-11	CARBON 10K 5% 1/6W	
R116	1-247-862-00	CARBON 20K 5% 1/6W	
R117	1-249-429-11	CARBON 10K 5% 1/6W	
R118	1-249-429-11	CARBON 10K 5% 1/6W	
R119	1-249-437-11	CARBON 47K 5% 1/6W	
R120	1-247-129-00	CARBON 820 5% 1/4W	
R121	1-247-862-00	CARBON 20K 5% 1/6W	
R122	1-247-862-00	CARBON 20K 5% 1/6W	
R123	1-247-862-00	CARBON 20K 5% 1/6W	
R124	1-247-809-00	CARBON 120 5% 1/6W	
R125	1-249-437-11	CARBON 47K 5% 1/6W	
R126	1-247-700-11	CARBON 100 5% 1/4W	
R130	1-247-857-00	CARBON 12K 5% 1/6W	
R131	1-247-857-00	CARBON 12K 5% 1/6W	
R134	1-247-867-00	CARBON 33K 5% 1/6W	
R135	1-247-863-00	CARBON 22K 5% 1/6W	
R136	1-247-829-00	CARBON 820 5% 1/6W	
		THERMISTOR	
RP00131-806-886-11		THERMISTOR (POSITIVE)	

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*A-7060-139-A VI-9B BOARD, COMPLETE
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CAPACITOR

C001	1-161-025-00	CERAMIC	0.1MF	10%	25V
C002	1-102-824-00	CERAMIC	470PF	5%	50V
C003	1-101-006-21	CERAMIC	0.047MF		50V
C004	1-161-025-00	CERAMIC	0.1MF	10%	25V
C006	1-102-116-00	CERAMIC	680PF	10%	50V
C007	1-101-006-21	CERAMIC	0.047MF		50V
C008	1-123-356-00	ELECT	10MF	20%	16V
C009	1-123-356-00	ELECT	10MF	20%	16V
C010	1-123-356-00	ELECT	10MF	20%	16V
C011	1-101-006-21	CERAMIC	0.047MF		50V
C012	1-101-006-21	CERAMIC	0.047MF		50V
C013	1-123-380-00	ELECT	1MF	20%	50V
C014	1-123-309-00	ELECT	330MF	20%	6.3V
C015	1-123-330-00	ELECT	22MF	20%	16V
C016	1-123-369-00	ELECT	4.7MF	20%	25V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C017	1-123-369-00	ELECT	4.7MF	20%	25V
C018	1-123-356-00	ELECT	10MF	20%	16V
C019	1-123-356-00	ELECT	10MF	20%	16V
C020	1-101-006-21	CERAMIC	0.047MF		50V
C021	1-101-890-21	CERAMIC	75PF	5%	50V
C022	1-101-888-00	CERAMIC	68PF	5%	50V
C023	1-101-880-00	CERAMIC	47PF	5%	50V
C024	1-101-004-00	CERAMIC	0.01MF		50V
C025	1-101-006-21	CERAMIC	0.047MF		50V
C026	1-101-006-21	CERAMIC	0.047MF		50V
C027	1-123-608-00	ELECT	0.22MF	20%	50V
C028	1-123-356-00	ELECT	10MF	20%	16V
C029	1-123-356-00	ELECT	10MF	20%	16V
C030	1-102-820-00	CERAMIC	330PF	5%	50V
C031	1-102-973-00	CERAMIC	100PF	5%	50V
C032	1-102-820-00	CERAMIC	330PF	5%	50V
C033	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C034	1-102-958-00	CERAMIC	20PF	5%	50V
C035	1-102-959-00	CERAMIC	22PF	5%	50V
C038	1-101-006-21	CERAMIC	0.047MF		50V
C039	1-102-947-00	CERAMIC	10PF	5%	50V
C041	1-102-976-00	CERAMIC	180PF	5%	50V
C042	1-123-369-00	ELECT	4.7MF	20%	25V
C045	1-123-382-00	ELECT	3.3MF	20%	50V
C046	1-101-880-00	CERAMIC	47PF	5%	50V
C049	1-101-006-21	CERAMIC	0.047MF		50V
C050	1-102-980-00	CERAMIC	270PF	5%	50V
C051	1-101-005-00	CERAMIC	0.022MF		50V
C052	1-101-005-00	CERAMIC	0.022MF		50V
C053	1-101-006-21	CERAMIC	0.047MF		50V
C054	1-123-356-00	ELECT	10MF	20%	16V
C055	1-102-965-00	CERAMIC	39PF	5%	50V
C056	1-102-946-00	CERAMIC	9PF	0.5PF	50V
C057	1-102-963-00	CERAMIC	33PF	5%	50V
C058	1-101-006-21	CERAMIC	0.047MF		50V
C059	1-102-976-00	CERAMIC	180PF	5%	50V
C060	1-101-888-00	CERAMIC	68PF	5%	50V
C061	1-161-025-00	CERAMIC	0.1MF	10%	25V
C063	1-101-361-00	CERAMIC	150PF	5%	50V
C064	1-102-976-00	CERAMIC	180PF	5%	50V
C065	1-102-971-00	CERAMIC	82PF	5%	50V
C066	1-102-946-00	CERAMIC	9PF	0.5PF	50V
C067	1-102-820-00	CERAMIC	330PF	5%	50V
C068	1-102-960-00	CERAMIC	24PF	5%	50V
C073	1-101-006-21	CERAMIC	0.047MF		50V
C075	1-102-946-00	CERAMIC	9PF	0.5PF	50V
C076	1-102-947-00	CERAMIC	10PF	5%	50V
C077	1-102-119-00	CERAMIC	0.0015MF	10%	50V
C080	1-102-961-00	CERAMIC	27PF	5%	50V
C100	1-101-006-21	CERAMIC	0.047MF		50V
C101	1-102-074-00	CERAMIC	0.001MF	10%	50V
C102	1-101-004-00	CERAMIC	0.01MF		50V
C103	1-101-884-00	CERAMIC	56PF	5%	50V

Ref.No	Part No.	Description			Remark
C104	1-102-959-00	CERAMIC	22PF	5%	50V
C105	1-123-381-00	ELECT	2.2MF	20%	50V
C106	1-123-369-00	ELECT	4.7MF	20%	25V
C107	1-101-884-00	CERAMIC	56PF	5%	50V
C109	1-101-006-21	CERAMIC	0.047MF		50V
C110	1-123-381-00	ELECT	2.2MF	20%	50V
C111	1-123-369-00	ELECT	4.7MF	20%	25V
C112	1-123-369-00	ELECT	4.7MF	20%	25V
C114	1-101-880-00	CERAMIC	47PF	5%	50V
C115	1-101-888-00	CERAMIC	68PF	5%	50V
C116	1-101-361-00	CERAMIC	150PF	5%	50V
C117	1-102-947-00	CERAMIC	10PF	5%	50V
C118	1-123-307-00	ELECT	100MF	20%	6.3V
C119	1-101-890-21	CERAMIC	75PF	5%	50V
C120	1-101-886-21	CERAMIC	62PF	5%	50V
C121	1-101-004-00	CERAMIC	0.01MF		50V
C122	1-101-884-00	CERAMIC	56PF	5%	50V
C123	1-101-004-00	CERAMIC	0.01MF		50V
C124	1-102-959-00	CERAMIC	22PF	5%	50V
C125	1-123-356-00	ELECT	10MF	20%	16V
C126	1-102-074-00	CERAMIC	0.001MF	10%	50V
C127	1-102-074-00	CERAMIC	0.001MF	10%	50V
C128	1-101-006-21	CERAMIC	0.047MF		50V
C129	1-123-308-00	ELECT	220MF	20%	6.3V
C130	1-101-006-21	CERAMIC	0.047MF		50V
C131	1-101-006-21	CERAMIC	0.047MF		50V
C132	1-123-330-00	ELECT	22MF	20%	16V
C133	1-101-004-00	CERAMIC	0.01MF		50V
C135	1-102-074-00	CERAMIC	0.001MF	10%	50V
C136	1-102-959-00	CERAMIC	22PF	5%	50V
C137	1-102-074-00	CERAMIC	0.001MF	10%	50V
C139	1-102-074-00	CERAMIC	0.001MF	10%	50V
C140	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C141	1-123-382-00	ELECT	3.3MF	20%	50V
C142	1-102-074-00	CERAMIC	0.001MF	10%	50V
C143	1-102-074-00	CERAMIC	0.001MF	10%	50V
C144	1-101-006-21	CERAMIC	0.047MF		50V
C145	1-123-356-00	ELECT	10MF	20%	16V
C147	1-101-004-00	CERAMIC	0.01MF		50V
C148	1-102-074-00	CERAMIC	0.001MF	10%	50V
C150	1-102-074-00	CERAMIC	0.001MF	10%	50V
C151	1-101-361-00	CERAMIC	150PF	5%	50V
C153	1-102-959-00	CERAMIC	22PF	5%	50V
C154	1-123-381-00	ELECT	2.2MF	20%	50V
C155	1-101-006-21	CERAMIC	0.047MF		50V
C156	1-101-888-00	CERAMIC	68PF	5%	50V
C157	1-101-006-21	CERAMIC	0.047MF		50V
C158	1-102-123-00	CERAMIC	0.0033MF	10%	50V
C159	1-124-239-00	ELECT	6.8MF	20%	25V
C160	1-123-330-00	ELECT	22MF	20%	16V
C161	1-102-963-00	CERAMIC	33PF	5%	50V
C162	1-101-884-00	CERAMIC	56PF	5%	50V
C163	1-102-978-00	CERAMIC	220PF	5%	50V

When indicating parts by reference number, please include the board name.

VI-9B

Ref.No	Part No.	Description			Remark
C164	1-102-978-00	CERAMIC	220PF	5%	50V
C172	1-101-880-00	CERAMIC	47PF	5%	50V
C172	1-101-880-00	CERAMIC	47PF	5%	50V
C200	1-101-006-21	CERAMIC	0.047MF		50V
C201	1-101-006-21	CERAMIC	0.047MF		50V
C202	1-101-004-00	CERAMIC	0.01MF		50V
C203	1-101-004-00	CERAMIC	0.01MF		50V
C204	1-101-004-00	CERAMIC	0.01MF		50V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-102-074-00	CERAMIC	0.001MF	10%	50V
C208	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C209	1-123-356-00	ELECT	10MF	20%	16V
C210	1-101-004-00	CERAMIC	0.01MF		50V
C211	1-102-820-00	CERAMIC	330PF	5%	50V
C212	1-101-004-00	CERAMIC	0.01MF		50V
C213	1-102-820-00	CERAMIC	330PF	5%	50V
C214	1-101-006-21	CERAMIC	0.047MF		50V
C215	1-102-820-00	CERAMIC	330PF	5%	50V
C216	1-102-947-00	CERAMIC	10PF	5%	50V
C217	1-102-966-00	CERAMIC	43PF	5%	50V
C218	1-102-074-00	CERAMIC	0.001MF	10%	50V
C219	1-102-820-00	CERAMIC	330PF	5%	50V
C220	1-102-820-00	CERAMIC	330PF	5%	50V
C221	1-101-004-00	CERAMIC	0.01MF		50V
C222	1-124-239-00	ELECT	6.8MF	20%	25V
C223	1-101-005-00	CERAMIC	0.022MF		50V
C224	1-123-359-00	ELECT	4.7MF	20%	25V
C225	1-123-356-00	ELECT	10MF	20%	16V
C227	1-101-004-00	CERAMIC	0.01MF		50V
C228	1-101-006-21	CERAMIC	0.047MF		50V
C229	1-123-381-00	ELECT	2.2MF	20%	50V
C230	1-123-608-00	ELECT	0.22MF	20%	50V
C231	1-101-005-00	CERAMIC	0.022MF		50V
C232	1-102-074-00	CERAMIC	0.001MF	10%	50V
C233	1-101-006-21	CERAMIC	0.047MF		50V
C234	1-123-381-00	ELECT	2.2MF	20%	50V
C235	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C237	1-101-880-00	CERAMIC	47PF	5%	50V
C238	1-102-820-00	CERAMIC	330PF	5%	50V
C239	1-102-074-00	CERAMIC	0.001MF	10%	50V
C240	1-123-381-00	ELECT	2.2MF	20%	50V
C241	1-102-074-00	CERAMIC	0.001MF	10%	50V
C242	1-101-005-00	CERAMIC	0.022MF		50V
C243	1-102-962-21	CERAMIC	30PF	5%	50V
C244	1-102-976-00	CERAMIC	180PF	5%	50V
C245	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C246	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C247	1-123-356-00	ELECT	10MF	20%	16V
C248	1-101-006-21	CERAMIC	0.047MF		50V
C249	1-102-820-00	CERAMIC	330PF	5%	50V
C250	1-123-607-00	ELECT	0.1MF	20%	50V
C251	1-123-609-00	ELECT	0.33MF	20%	50V
C252	1-102-963-00	CERAMIC	33PF	5%	50V

Ref.No	Part No.	Description			Remark
C253	1-102-973-00	CERAMIC	100PF	5%	50V
C254	1-101-880-00	CERAMIC	47PF	5%	50V
C255	1-101-880-00	CERAMIC	47PF	5%	50V
C256	1-123-356-00	ELECT	10MF	20%	16V
C257	1-161-025-00	CERAMIC	0.1MF	10%	25V
C258	1-101-888-00	CERAMIC	68PF	5%	50V
C259	1-102-951-00	CERAMIC	15PF	5%	50V
C260	1-102-976-00	CERAMIC	180PF	5%	50V
C261	1-102-945-00	CERAMIC	8PF	0.5PF	50V
C262	1-101-006-21	CERAMIC	0.047MF		50V
C264	1-101-006-21	CERAMIC	0.047MF		50V
C265	1-101-004-00	CERAMIC	0.01MF		50V
C266	1-101-006-21	CERAMIC	0.047MF		50V
C267	1-101-006-21	CERAMIC	0.047MF		50V
C269	1-101-004-00	CERAMIC	0.01MF		50V
C270	1-102-074-00	CERAMIC	0.001MF	10%	50V
C271	1-101-004-00	CERAMIC	0.01MF		50V
C300	1-123-356-00	ELECT	10MF	20%	16V
C302	1-123-356-00	ELECT	10MF	20%	16V
C304	1-123-381-00	ELECT	2.2MF	20%	50V
C400	1-101-004-00	CERAMIC	0.01MF		50V
C401	1-102-361-00	CERAMIC	0.0039MF	10%	50V
C501	1-101-381-00	CERAMIC	150PF	5%	50V
C502	1-101-004-00	CERAMIC	0.01MF		50V
C601	1-161-772-51	CERAMIC	0.1MF	10%	25V
C602	1-161-023-51	CERAMIC	0.068MF	10%	25V

CONNECTOR

CN002	*1-560-890-00	PIN, CONNECTOR 2P
CN003	*1-560-895-00	PIN, CONNECTOR 7P
CN004	*1-560-890-00	PIN, CONNECTOR 2P
CN006	1-561-534-00	SOCKET 21P
CN008	*1-560-893-00	PIN, CONNECTOR 5P
CN011	*1-560-896-00	PIN, CONNECTOR 8P
CN012	*1-560-893-00	PIN, CONNECTOR 5P

COMPOSITION CIRCUIT BLOCK

CP001	1-232-919-11	COMPOSITION CIRCUIT BLOCK
CP003	1-232-914-11	COMPOSITION CIRCUIT BLOCK
CP004	1-232-917-11	COMPOSITION CIRCUIT BLOCK
CP005	1-232-918-11	COMPOSITION CIRCUIT BLOCK
CP006	1-232-928-11	COMPOSITION CIRCUIT BLOCK
CP007	1-232-935-11	COMPOSITION CIRCUIT BLOCK
CP008	1-232-937-11	COMPOSITION CIRCUIT BLOCK
CP011	1-232-922-11	COMPOSITION CIRCUIT BLOCK
CP012	1-232-920-11	COMPOSITION CIRCUIT BLOCK
CP013	1-232-938-11	COMPOSITION CIRCUIT BLOCK
CP014	1-232-915-11	COMPOSITION CIRCUIT BLOCK
CP015	1-232-912-11	COMPOSITION CIRCUIT BLOCK
CP016	1-232-931-11	COMPOSITION CIRCUIT BLOCK
CP017	1-232-913-11	COMPOSITION CIRCUIT BLOCK
CP018	1-232-933-11	COMPOSITION CIRCUIT BLOCK
CP019	1-232-916-11	COMPOSITION CIRCUIT BLOCK
CP020	1-232-932-11	COMPOSITION CIRCUIT BLOCK

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
CP021	1-232-936-11	COMPOSITION CIRCUIT BLOCK	
CP022	1-232-934-11	COMPOSITION CIRCUIT BLOCK	
CP100	1-232-927-11	COMPOSITION CIRCUIT BLOCK	
CP101	1-232-921-11	COMPOSITION CIRCUIT BLOCK	
		TRIMMER	
CV200	1-141-227-00	CAP, CERAMIC TRIMMER	
		DIODE	
D001	8-719-911-19	DIODE 1SS119	
D002	8-719-151-07	DIODE RD5.1E-B	
D003	8-719-815-87	DIODE 1S1587	
D004	8-719-815-87	DIODE 1S1587	
D005	8-719-815-87	DIODE 1S1587	
D006	8-719-815-87	DIODE 1S1587	
D008	8-719-911-19	DIODE 1SS119	
D009	8-719-911-19	DIODE 1SS119	
D010	8-719-815-87	DIODE 1S1587	
D102	8-719-000-12	DIODE MC931	
D103	8-719-000-06	DIODE MC921	
D104	8-719-815-87	DIODE 1S1587	
D105	8-719-815-87	DIODE 1S1587	
D106	8-719-000-12	DIODE MC931	
D107	8-719-000-12	DIODE MC931	
D200	8-719-100-37	DIODE RD6.2ES1	
D203	8-719-000-06	DIODE MC921	
D204	8-719-000-06	DIODE MC921	
		DELAY LINE	
DL100	1-415-282-31	DELAY LINE	
DL101	1-415-386-21	DELAY LINE, 1H (13.3MHZ)	
		FILTER	
FL002	1-409-397-11	TRAP	
FL100	1-235-440-11	FILTER, BAND PASS (3.7MHZ)	
FL101	1-235-441-11	FILTER, BAND PASS (5.17MHZ)	
FL200	1-409-408-11	C.E TRAP	
FL201	1-409-396-11	REC C TRAP	
FL202	1-235-437-11	BPF, PB C	
		IC	
IC001	8-752-013-00	IC CX20130	
IC002	8-752-013-10	IC CX20131	
IC003	8-752-013-20	IC CX20132	
IC004	8-752-203-10	IC CX22031	
IC005	8-759-913-64	IC CX23064	
IC006	8-759-202-68	IC CX20147	
IC007	1-235-497-11	REC PILOT LPF	
		COIL	
L001	1-408-421-00	MICRO INDUCTOR 100UH	
L002	1-408-413-00	MICRO INDUCTOR 22UH	

Ref.No	Part No.	Description	Remark
L004	1-408-424-00	MICRO INDUCTOR 180UH	
L005	1-408-426-00	MICRO INDUCTOR 270UH	
L006	1-408-425-00	MICRO INDUCTOR 220UH	
L007	1-408-419-00	MICRO INDUCTOR 68UH	
L010	1-408-424-00	MICRO INDUCTOR 180UH	
L013	1-408-421-00	MICRO INDUCTOR 100UH	
L016	1-408-416-00	MICRO INDUCTOR 39UH	
L017	1-408-427-00	MICRO INDUCTOR 330UH	
L018	1-408-422-00	MICRO INDUCTOR 120UH	
L019	1-408-423-00	MICRO INDUCTOR 150UH	
L021	1-410-072-21	MICRO INDUCTOR 820UH	
L022	1-408-421-00	MICRO INDUCTOR 100UH	
L100	1-408-397-00	MICRO INDUCTOR 1UH	
L101	1-408-397-00	MICRO INDUCTOR 1UH	
L103	1-408-418-00	MICRO INDUCTOR 56UH	
L104	1-408-420-00	MICRO INDUCTOR 82UH	
L105	1-408-418-00	MICRO INDUCTOR 56UH	
L106	1-408-421-00	MICRO INDUCTOR 100UH	
L107	1-408-419-00	MICRO INDUCTOR 68UH	
L108	1-408-413-00	MICRO INDUCTOR 22UH	
L109	1-408-408-00	MICRO INDUCTOR 8.2UH	
L110	1-408-412-00	MICRO INDUCTOR 18UH	
L111	1-408-413-00	MICRO INDUCTOR 22UH	
L112	1-408-418-00	MICRO INDUCTOR 56UH	
L113	1-408-397-00	MICRO INDUCTOR 1UH	
L114	1-408-417-00	MICRO INDUCTOR 47UH	
L115	1-408-417-00	MICRO INDUCTOR 47UH	
L116	1-408-414-00	MICRO INDUCTOR 27UH	
L200	1-408-424-00	MICRO INDUCTOR 180UH	
L201	1-408-413-00	MICRO INDUCTOR 22UH	
L203	1-408-422-00	MICRO INDUCTOR 120UH	
L204	1-410-072-21	MICRO INDUCTOR 820UH	
L205	1-408-422-00	MICRO INDUCTOR 120UH	
L206	1-408-425-00	MICRO INDUCTOR 220UH	
L207	1-408-420-00	MICRO INDUCTOR 82UH	
L208	1-408-407-00	MICRO INDUCTOR 6.8UH	
L209	1-408-427-00	MICRO INDUCTOR 330UH	
L400	1-408-989-21	MICRO INDUCTOR 470UH	
		VARIABLE COIL	
LV100	1-408-512-00	COIL (VARIABLE)	
		IC LINK	
PS200	1-532-879-00	LINK, IC	
		TRANSISTOR	
Q002	8-729-900-36	TRANSISTOR DTC124ES	
Q003	8-729-117-54	TRANSISTOR 2SA1175	
Q004	8-729-117-54	TRANSISTOR 2SA1175	
Q007	8-729-117-54	TRANSISTOR 2SA1175	
Q008	8-729-384-48	TRANSISTOR 2SA844	
Q009	8-729-245-83	TRANSISTOR 2SC2458	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

VI-9B

Ref.No	Part No.	Description	Remark
Q010	8-729-245-83	TRANSISTOR 2SC2458	
Q011	8-729-900-36	TRANSISTOR DTC124ES	
Q012	8-729-117-54	TRANSISTOR 2SA1175	
Q013	8-729-117-54	TRANSISTOR 2SA1175	
Q014	8-729-900-36	TRANSISTOR DTC124ES	
Q015	8-729-900-36	TRANSISTOR DTC124ES	
Q016	8-729-245-83	TRANSISTOR 2SC2458	
Q017	8-729-900-36	TRANSISTOR DTC124ES	
Q021	8-729-900-89	TRANSISTOR DTC144ES	
Q100	8-729-900-36	TRANSISTOR DTC124ES	
Q101	8-729-900-36	TRANSISTOR DTC124ES	
Q102	8-729-117-54	TRANSISTOR 2SA1175	
Q103	8-729-245-83	TRANSISTOR 2SC2458	
Q104	8-729-245-83	TRANSISTOR 2SC2458	
Q105	8-729-245-83	TRANSISTOR 2SC2458	
Q106	8-729-245-83	TRANSISTOR 2SC2458	
Q107	8-729-900-36	TRANSISTOR DTC124ES	
Q108	8-729-900-36	TRANSISTOR DTC124ES	
Q109	8-729-900-36	TRANSISTOR DTC124ES	
Q110	8-729-245-83	TRANSISTOR 2SC2458	
Q111	8-729-900-36	TRANSISTOR DTC124ES	
Q200	8-729-245-83	TRANSISTOR 2SC2458	
Q201	8-729-900-36	TRANSISTOR DTC124ES	
Q203	8-729-603-50	TRANSISTOR 2SC403SP	
Q204	8-729-603-50	TRANSISTOR 2SC4O3SP	
Q205	8-729-900-36	TRANSISTOR DTC124ES	
Q206	8-729-117-54	TRANSISTOR 2SA1175	
Q207	8-729-900-36	TRANSISTOR DTC124ES	
Q208	8-729-245-83	TRANSISTOR 2SC2458	
Q209	8-729-245-83	TRANSISTOR 2SC2458	
Q212	8-729-245-83	TRANSISTOR 2SC2458	
Q213	8-729-900-36	TRANSISTOR DTC124ES	
Q214	8-729-900-36	TRANSISTOR DTC124ES	
Q215	8-729-245-83	TRANSISTOR 2SC2458	
Q216	8-729-245-83	TRANSISTOR 2SC2458	
Q217	8-729-245-83	TRANSISTOR 2SC2458	
Q218	8-729-900-61	TRANSISTOR DTA114ES	
Q220	8-729-245-83	TRANSISTOR 2SC2458	
Q258	8-729-900-36	TRANSISTOR DTC124ES	
Q300	8-729-900-36	TRANSISTOR DTC124ES	
Q401	8-729-900-89	TRANSISTOR DTC144ES	
Q402	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-247-881-00	CARBON	120K	5%	1/6W	
R002	1-247-895-00	CARBON	470K	5%	1/6W	
R003	1-247-857-00	CARBON	12K	5%	1/6W	
R004	1-247-859-00	CARBON	15K	5%	1/6W	
R005	1-249-437-11	CARBON	47K	5%	1/6W	
R006	1-249-437-11	CARBON	47K	5%	1/6W	
R007	1-247-831-00	CARBON	1K	5%	1/6W	
R008	1-247-891-00	CARBON	330K	5%	1/6W	
R010	1-247-831-00	CARBON	1K	5%	1/6W	
R011	1-247-879-00	CARBON	100K	5%	1/6W	
R012	1-247-875-00	CARBON	68K	5%	1/6W	
R013	1-247-831-00	CARBON	1K	5%	1/6W	
R014	1-249-437-11	CARBON	47K	5%	1/6W	
R015	1-249-437-11	CARBON	47K	5%	1/6W	
R016	1-249-437-11	CARBON	47K	5%	1/6W	
R017	1-247-873-00	CARBON	56K	5%	1/6W	
R018	1-247-847-00	CARBON	4.7K	5%	1/6W	
R019	1-247-847-00	CARBON	4.7K	5%	1/6W	
R020	1-247-831-00	CARBON	1K	5%	1/6W	
R022	1-247-863-00	CARBON	22K	5%	1/6W	
R023	1-247-823-00	CARBON	470	5%	1/6W	
R024	1-249-437-11	CARBON	47K	5%	1/6W	
R025	1-249-437-11	CARBON	47K	5%	1/6W	
R026	1-249-437-11	CARBON	47K	5%	1/6W	
R027	1-249-437-11	CARBON	47K	5%	1/6W	
R029	1-249-421-11	CARBON	2.2K	5%	1/6W	
R030	1-247-841-00	CARBON	2.7K	5%	1/6W	
R031	1-249-421-11	CARBON	2.2K	5%	1/6W	
R032	1-247-845-00	CARBON	3.9K	5%	1/6W	
R033	1-247-883-00	CARBON	150K	5%	1/6W	
R037	1-247-853-00	CARBON	8.2K	5%	1/6W	
R040	1-247-823-00	CARBON	470	5%	1/6W	
R042	1-247-831-00	CARBON	1K	5%	1/6W	
R043	1-247-863-00	CARBON	22K	5%	1/6W	
R045	1-247-831-00	CARBON	1K	5%	1/6W	
R050	1-249-421-11	CARBON	2.2K	5%	1/6W	
R051	1-249-421-11	CARBON	2.2K	5%	1/6W	
R052	1-247-841-00	CARBON	2.7K	5%	1/6W	
R054	1-247-837-00	CARBON	1.8K	5%	1/6W	
R055	1-247-804-00	CARBON	75	5%	1/6W	
R056	1-247-797-00	CARBON	39	5%	1/6W	
R057	1-247-797-00	CARBON	39	5%	1/6W	
R058	1-247-825-00	CARBON	560	5%	1/6W	
R059	1-247-845-00	CARBON	3.9K	5%	1/6W	
R060	1-247-821-00	CARBON	390	5%	1/6W	
R062	1-247-825-00	CARBON	560	5%	1/6W	
R063	1-247-817-00	CARBON	270	5%	1/6W	
R064	1-247-863-00	CARBON	22K	5%	1/6W	
R065	1-247-823-00	CARBON	470	5%	1/6W	
R066	1-247-833-00	CARBON	1.2K	5%	1/6W	
R067	1-247-805-00	CARBON	82	5%	1/6W	
R068	1-249-421-11	CARBON	2.2K	5%	1/6W	
R069	1-247-827-00	CARBON	680	5%	1/6W	
R070	1-247-883-00	CARBON	150K	5%	1/6W	
R072	1-247-815-00	CARBON	220	5%	1/6W	
R073	1-247-847-00	CARBON	4.7K	5%	1/6W	
R074	1-247-847-00	CARBON	4.7K	5%	1/6W	
R075	1-247-843-00	CARBON	3.3K	5%	1/6W	
R077	1-247-825-00	CARBON	560	5%	1/6W	
R079	1-249-419-11	CARBON	1.5K	5%	1/6W	
R080	1-247-863-00	CARBON	22K	5%	1/6W	
R083	1-247-817-00	CARBON	270	5%	1/6W	
R084	1-247-815-00	CARBON	220	5%	1/6W	
R101	1-247-809-00	CARBON	120	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R102	1-247-857-00	CARBON	12K	5%	1/6W	
R103	1-247-863-00	CARBON	22K	5%	1/6W	
R104	1-247-863-00	CARBON	22K	5%	1/6W	
R105	1-247-895-00	CARBON	470K	5%	1/6W	
R106	1-247-903-00	CARBON	1M	5%	1/6W	
R107	1-247-807-00	CARBON	100	5%	1/6W	
R108	1-249-429-11	CARBON	10K	5%	1/6W	
R110	1-247-869-00	CARBON	39K	5%	1/6W	
R111	1-247-859-00	CARBON	15K	5%	1/6W	
R113	1-247-833-00	CARBON	1.2K	5%	1/6W	
R114	1-247-847-00	CARBON	4.7K	5%	1/6W	
R122	1-247-829-00	CARBON	820	5%	1/6W	
R125	1-247-833-00	CARBON	1.2K	5%	1/6W	
R131	1-247-831-00	CARBON	1K	5%	1/6W	
R132	1-247-823-00	CARBON	470	5%	1/6W	
R133	1-247-831-00	CARBON	1K	5%	1/6W	
R134	1-247-821-00	CARBON	390	5%	1/6W	
R135	1-247-821-00	CARBON	390	5%	1/6W	
R136	1-247-809-00	CARBON	120	5%	1/6W	
R137	1-247-817-00	CARBON	270	5%	1/6W	
R138	1-249-437-11	CARBON	47K	5%	1/6W	
R139	1-249-437-11	CARBON	47K	5%	1/6W	
R140	1-247-831-00	CARBON	1K	5%	1/6W	
R141	1-249-434-11	CARBON	27K	5%	1/6W	
R143	1-247-807-00	CARBON	100	5%	1/6W	
R144	1-247-791-00	CARBON	22	5%	1/6W	
R145	1-249-421-11	CARBON	2.2K	5%	1/6W	
R146	1-247-831-00	CARBON	1K	5%	1/6W	
R147	1-247-831-00	CARBON	1K	5%	1/6W	
R151	1-249-419-11	CARBON	1.5K	5%	1/6W	
R155	1-249-437-11	CARBON	47K	5%	1/6W	
R156	1-247-875-00	CARBON	68K	5%	1/6W	
R159	1-247-825-00	CARBON	560	5%	1/6W	
R161	1-247-823-00	CARBON	470	5%	1/6W	
R164	1-247-827-00	CARBON	680	5%	1/6W	
R165	1-247-847-00	CARBON	4.7K	5%	1/6W	
R173	1-249-419-11	CARBON	1.5K	5%	1/6W	
R174	1-247-849-00	CARBON	5.6K	5%	1/6W	
R175	1-247-827-00	CARBON	680	5%	1/6W	
R176	1-247-827-00	CARBON	680	5%	1/6W	
R178	1-247-831-00	CARBON	1K	5%	1/6W	
R179	1-247-895-00	CARBON	470K	5%	1/6W	
R180	1-249-434-11	CARBON	27K	5%	1/6W	
R181	1-247-831-00	CARBON	1K	5%	1/6W	
R182	1-249-429-11	CARBON	10K	5%	1/6W	
R183	1-247-861-00	CARBON	18K	5%	1/6W	
R184	1-247-879-00	CARBON	100K	5%	1/6W	
R185	1-247-841-00	CARBON	2.7K	5%	1/6W	
R186	1-247-859-00	CARBON	15K	5%	1/6W	
R187	1-247-867-00	CARBON	33K	5%	1/6W	
R190	1-247-861-00	CARBON	18K	5%	1/6W	
R200	1-247-867-00	CARBON	33K	5%	1/6W	
R203	1-247-841-00	CARBON	2.7K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R209	1-247-831-00	CARBON	1K	5%	1/6W	
R218	1-247-807-00	CARBON	100	5%	1/6W	
R219	1-249-421-11	CARBON	2.2K	5%	1/6W	
R220	1-247-831-00	CARBON	1K	5%	1/6W	
R221	1-247-831-00	CARBON	1K	5%	1/6W	
R222	1-247-859-00	CARBON	15K	5%	1/6W	
R223	1-247-827-00	CARBON	680	5%	1/6W	
R224	1-247-859-00	CARBON	15K	5%	1/6W	
R225	1-247-847-00	CARBON	4.7K	5%	1/6W	
R226	1-247-863-00	CARBON	22K	5%	1/6W	
R227	1-249-421-11	CARBON	2.2K	5%	1/6W	
R232	1-247-863-00	CARBON	22K	5%	1/6W	
R233	1-247-879-00	CARBON	100K	5%	1/6W	
R234	1-247-851-00	CARBON	6.8K	5%	1/6W	
R235	1-249-421-11	CARBON	2.2K	5%	1/6W	
R236	1-249-437-11	CARBON	47K	5%	1/6W	
R237	1-249-437-11	CARBON	47K	5%	1/6W	
R238	1-247-847-00	CARBON	4.7K	5%	1/6W	
R239	1-247-831-00	CARBON	1K	5%	1/6W	
R240	1-247-847-00	CARBON	4.7K	5%	1/6W	
R248	1-247-885-00	CARBON	180K	5%	1/6W	
R251	1-249-429-11	CARBON	10K	5%	1/6W	
R253	1-247-847-00	CARBON	4.7K	5%	1/6W	
R254	1-249-437-11	CARBON	47K	5%	1/6W	
R261	1-247-831-00	CARBON	1K	5%	1/6W	
R262	1-247-841-00	CARBON	2.7K	5%	1/6W	
R264	1-247-831-00	CARBON	1K	5%	1/6W	
R265	1-247-823-00	CARBON	470	5%	1/6W	
R266	1-247-807-00	CARBON	100	5%	1/6W	
R267	1-247-827-00	CARBON	680	5%	1/6W	
R268	1-247-867-00	CARBON	33K	5%	1/6W	
R269	1-247-863-00	CARBON	22K	5%	1/6W	
R270	1-247-831-00	CARBON	1K	5%	1/6W	
R271	1-247-847-00	CARBON	4.7K	5%	1/6W	
R272	1-247-849-00	CARBON	5.6K	5%	1/6W	
R273	1-247-867-00	CARBON	33K	5%	1/6W	
R277	1-249-437-11	CARBON	47K	5%	1/6W	
R280	1-247-829-00	CARBON	820	5%	1/6W	
R282	1-247-863-00	CARBON	22K	5%	1/6W	
R284	1-247-831-00	CARBON	1K	5%	1/6W	
R285	1-247-841-00	CARBON	2.7K	5%	1/6W	
R286	1-247-815-00	CARBON	220	5%	1/6W	
R287	1-247-831-00	CARBON	1K	5%	1/6W	
R288	1-247-831-00	CARBON	1K	5%	1/6W	
R289	1-247-831-00	CARBON	1K	5%	1/6W	
R290	1-247-840-00	CARBON	2.4K	5%	1/6W	
R292	1-247-847-00	CARBON	4.7K	5%	1/6W	
R293	1-247-831-00	CARBON	1K	5%	1/6W	
R306	1-247-827-00	CARBON	680	5%	1/6W	
R307	1-247-827-00	CARBON	680	5%	1/6W	
R309	1-247-783-00	CARBON	10	5%	1/6W	
R310	1-247-831-00	CARBON	1K	5%	1/6W	
R311	1-247-831-00	CARBON	1K	5%	1/6W	
R312	1-247-873-00	CARBON	56K	5%	1/6W	

When indicating parts by reference number, please include the board name.

VI-9B SS-38C

Ref.No	Part No.	Description				Remark
R400	1-247-831-00	CARBON	1K	5%	1/6W	
R401	1-249-419-11	CARBON	1.5K	5%	1/6W	
R402	1-249-429-11	CARBON	10K	5%	1/6W	
R403	1-247-803-00	CARBON	68	5%	1/6W	
R501	1-247-831-00	CARBON	1K	5%	1/6W	
R600	1-247-831-00	CARBON	1K	5%	1/6W	
R601	1-247-847-00	CARBON	4.7K	5%	1/6W	
R900	1-249-419-11	CARBON	1.5K	5%	1/6W	
		VARIABLE RESISTOR				
RV001	1-228-995-00	RES, ADJ, CARBON 22K				
RV002	1-228-993-00	RES, ADJ, CARBON 4.7K				
RV003	1-228-995-00	RES, ADJ, CARBON 22K				
RV004	1-228-994-00	RES, ADJ, CARBON 10K				
RV005	1-228-995-00	RES, ADJ, CARBON 22K				
RV006	1-228-995-00	RES, ADJ, CARBON 22K				
RV100	1-228-995-00	RES, ADJ, CARBON 22K				
RV101	1-228-995-00	RES, ADJ, CARBON 22K				
RV102	1-228-998-00	RES, ADJ, CARBON 220K				
RV103	1-228-997-00	RES, ADJ, CARBON 100K				
RV201	1-228-990-00	RES, ADJ, CARBON 1K				
RV202	1-228-995-00	RES, ADJ, CARBON 22K				
RV203	1-228-989-00	RES, ADJ, CARBON 470				
RV204	1-228-994-00	RES, ADJ, CARBON 10K				
RV205	1-228-994-00	RES, ADJ, CARBON 10K				
RV206	1-228-995-00	RES, ADJ, CARBON 22K				
		CRYSTAL				
X100	1-567-442-11	VIBRATOR, CRYSTAL				
X200	1-567-146-11	VIBRATOR, CRYSTAL				
X201	1-567-345-11	VIBRATOR, CRYSTAL				
**********						
*A-7060-140-A	SS-38C BOARD, COMPLETE					
	**********					
	CAPACITOR					
C001	1-130-489-00	MYLAR	0.033MF	5%	50V	
C004	1-123-356-00	ELECT	10MF	20%	16V	
C005	1-123-380-00	ELECT	1MF	20%	50V	
C006	1-123-380-00	ELECT	1MF	20%	50V	
C010	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C098	1-162-306-31	CERAMIC	0.01MF	20%	16V	
C099	1-162-306-31	CERAMIC	0.01MF	20%	16V	
C102	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C103	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C105	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C106	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C107	1-101-880-00	CERAMIC	47PF	5%	50V	
C108	1-101-880-00	CERAMIC	47PF	5%	50V	
C109	1-161-043-00	CERAMIC	0.0022MF	10%	25V	
C110	1-125-373-11	DOUBLE LAYERS	22000MF		5.5V	
C111	1-161-025-00	CERAMIC	0.1MF	10%	25V	
C112	1-123-356-00	ELECT	10MF	20%	16V	
C113	1-161-025-00	CERAMIC	0.1MF	10%	25V	
C114	1-123-379-00	ELECT	0.47MF	20%	50V	
C115	1-123-379-00	ELECT	0.47MF	20%	50V	
C116	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C117	1-123-380-00	ELECT	1MF	20%	50V	
C118	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C121	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C122	1-102-973-00	CERAMIC	100PF	5%	50V	
C123	1-131-343-00	TANTALUM	0.22MF	20%	35V	
C131	1-119-353-00	ELECT	220MF		10V	
C136	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C138	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C190	1-102-973-00	CERAMIC	100PF	5%	50V	
C191	1-102-973-00	CERAMIC	100PF	5%	50V	
C201	1-130-481-00	MYLAR	0.0068MF	5%	50V	
C202	1-124-271-00	ELECT	1MF	20%	50V	
C203	1-102-973-00	CERAMIC	100PF	5%	50V	
C209	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C218	1-123-356-00	ELECT	10MF	20%	16V	
C219	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C220	1-161-047-00	CERAMIC	0.0047MF	10%	25V	
C231	1-124-268-00	ELECT	0.22MF	20%	50V	
C233	1-124-275-00	ELECT	2.2MF	20%	35V	
C234	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C241	1-124-282-00	ELECT	22MF	20%	25V	
C299	1-123-356-00	ELECT	10MF	20%	16V	
C301	1-102-517-00	CERAMIC	30PF	5%	50V	
C302	1-102-531-00	CERAMIC	150PF	5%	50V	
C303	1-102-905-00	CERAMIC	130PF	5%	50V	
C304	1-102-905-00	CERAMIC	130PF	5%	50V	
C305	1-102-905-00	CERAMIC	130PF	5%	50V	
C306	1-102-905-00	CERAMIC	130PF	5%	50V	
C307	1-124-271-00	ELECT	1MF	20%	50V	
C308	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C309	1-123-330-00	ELECT	22MF	20%	16V	
C310	1-123-330-00	ELECT	22MF	20%	16V	
C311	1-123-330-00	ELECT	22MF	20%	16V	
C320	1-123-330-00	ELECT	22MF	20%	16V	
C321	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C322	1-123-330-00	ELECT	22MF	20%	16V	
C333	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C350	1-124-271-00	ELECT	1MF	20%	50V	
C401	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C402	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C501	1-130-475-00	MYLAR	0.0022MF	5%	50V	
C502	1-130-475-00	MYLAR	0.0022MF	5%	50V	
		CONNECTOR				
CN101	*1-560-895-00	PIN, CONNECTOR 7P				
CN102	*1-560-900-00	PIN, CONNECTOR 12P				
CN103	*1-560-892-00	PIN, CONNECTOR 4P				
CN105	*1-560-897-00	PIN, CONNECTOR 9P				
CN106	*1-560-897-00	PIN, CONNECTOR 9P				

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
CN107	*1-560-895-00	PIN, CONNECTOR 7P	
CN108	*1-560-893-00	PIN, CONNECTOR 5P	
CN111	*1-560-895-00	PIN, CONNECTOR 7P	
CN112	*1-560-890-00	PIN, CONNECTOR 2P	
CN113	*1-560-890-00	PIN, CONNECTOR 2P	
CN114	*1-560-895-00	PIN, CONNECTOR 7P	
CN116	1-562-765-11	SOCKET 21P	
CN117	*1-560-894-00	PIN, CONNECTOR 6P	
CN119	*1-560-890-00	PIN, CONNECTOR 2P	
CN201	*1-560-895-00	PIN, CONNECTOR 7P	
CN202	*1-560-894-00	PIN, CONNECTOR 6P	
CN301	*1-560-892-00	PIN, CONNECTOR 4P	
CN601	*1-560-891-00	PIN, CONNECTOR 3P	
		COMPOSITION CIRCUIT BLOCK	
CP006	1-232-786-11	COMPOSITION CIRCUIT BLOCK	
CP008	1-232-789-11	COMPOSITION CIRCUIT BLOCK	
CP009	1-232-787-11	COMPOSITION CIRCUIT BLOCK	
CP010	1-232-790-11	COMPOSITION CIRCUIT BLOCK	
CP011	1-232-845-11	COMPOSITION CIRCUIT BLOCK	
CP012	1-232-786-11	COMPOSITION CIRCUIT BLOCK	
CP013	1-232-851-11	COMPOSITION CIRCUIT BLOCK	
CP018	1-232-841-11	COMPOSITION CIRCUIT BLOCK	
CP020	1-232-852-11	COMPOSITION CIRCUIT BLOCK	
CP021	1-232-846-12	COMPOSITION CIRCUIT BLOCK	
CP022	1-232-842-11	COMPOSITION CIRCUIT BLOCK	
CP023	1-232-924-11	COMPOSITION CIRCUIT BLOCK	
CP024	1-232-842-11	COMPOSITION CIRCUIT BLOCK	
CP028	1-232-923-11	COMPOSITION CIRCUIT BLOCK	
CP029	1-232-844-11	COMPOSITION CIRCUIT BLOCK	
CP030	1-232-782-11	COMPOSITION CIRCUIT BLOCK	
CP031	1-232-925-11	COMPOSITION CIRCUIT BLOCK	
CP032	1-232-930-11	COMPOSITION CIRCUIT BLOCK	
CP033	1-232-926-11	COMPOSITION CIRCUIT BLOCK	
		DIODE	
D004	8-719-911-19	DIODE 1SS119	
D005	8-719-000-06	DIODE MC921	
D102	8-719-000-06	DIODE MC921	
D104	8-719-000-12	DIODE MC931	
D106	8-719-000-12	DIODE MC931	
D108	8-719-101-32	DIODE RD2.7EL1	
D109	8-719-000-06	DIODE MC921	
D111	8-719-911-19	DIODE 1SS119	
D126	8-719-113-07	DIODE RD13E-B	
D131	8-719-113-07	DIODE RD13E-B	
D150	8-719-100-38	DIODE RD6.2EB2	
D151	8-719-100-38	DIODE RD6.2EB2	
D204	8-719-000-12	DIODE MC931	
D210	8-719-000-04	DIODE MC911	
D301	8-719-911-19	DIODE 1SS119	
D302	8-719-911-19	DIODE 1SS119	
D305	8-719-911-19	DIODE 1SS119	
D306	8-719-911-19	DIODE 1SS119	
D309	8-719-911-19	DIODE 1SS119	
D310	8-719-911-19	DIODE 1SS119	
D411	8-719-000-06	DIODE MC921	
D501	8-719-911-19	DIODE 1SS119	
D502	8-719-911-19	DIODE 1SS119	
		B,P,F	
FL301	1-235-396-21	BPF	
FL302	1-235-395-21	BPF	
		IC	
IC101	8-759-913-87	IC MB88551-159N	
IC102	8-752-320-11	IC CXK1001P	
IC103	8-759-913-67	IC MB3763P	
IC104	8-759-913-67	IC MB3763P	
IC105	8-759-240-30	IC TC40300P	
IC107	8-759-103-93	IC UPC393C	
IC108	8-759-200-07	IC TC40H157P	
IC109	8-759-602-64	IC M50761-692P	
IC110	8-759-240-11	IC TC40118P	
IC111	8-759-045-38	IC MC14538BCP	
IC112	8-759-700-81	IC NJM555D	
IC201	8-752-013-50	IC CX20135	
IC202	8-759-200-56	IC TC4526BP	
IC203	8-759-135-80	IC UPC358C	
IC204	8-759-240-66	IC TC40666P	
IC301	8-752-203-20	IC CX22032	
IC302	1-807-153-11	IC (DIFFERENTIAL DETECTOR)	
IC303	8-759-602-76	IC M50763-633SP	
IC304	8-759-940-94	IC MSM4094RS	
IC305	8-759-200-07	IC TC40H157P	
IC306	8-759-240-53	IC TC4053BP	
IC401	8-759-135-80	IC UPC358C	
IC402	8-759-045-38	IC MC14538BCP	
IC404	8-759-240-66	IC TC4066BP	
IC501	8-759-045-38	IC MC14538BCP	
		JACK	
J118	1-507-562-00	JACK	
		COIL	
L101	1-407-169-XX	MICRO INDUCTOR 100UH	
L501	1-408-411-00	MICRO INDUCTOR 15UH	
		IC LINK	
*S1001	1-532-665-00	LINK, IC	
*S1017	1-532-727-11	LINK, IC	
*S1028	1-532-665-00	LINK, IC	
		TRANSISTOR	
Q001	8-729-900-33	TRANSISTOR DTC144EF	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SS-38C

Ref.No	Part No.	Description	Remark
Q003	8-729-245-83	TRANSISTOR 2SC2458	
Q009	8-729-900-89	TRANSISTOR DTC144ES	
Q010	8-729-900-89	TRANSISTOR DTC144ES	
Q101	8-729-177-32	TRANSISTOR 2SD773	
Q103	8-729-900-89	TRANSISTOR DTC144ES	
Q104	8-729-245-83	TRANSISTOR 2SC2458	
Q105	8-729-245-83	TRANSISTOR 2SC2458	
Q107	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q111	8-729-900-63	TRANSISTOR DTA124ES	
Q112	8-729-900-80	TRANSISTOR DTC114ES	
Q113	8-729-900-63	TRANSISTOR DTA124ES	
Q114	8-729-245-83	TRANSISTOR 2SC2458	
Q116	8-729-245-83	TRANSISTOR 2SC2458	
Q117	8-729-245-83	TRANSISTOR 2SC2458	
Q118	8-729 245-83	TRANSISTOR 2SC2458	
Q122	8-729-900-89	TRANSISTOR DTC144ES	
Q123	8-729 900-89	TRANSISTOR DTC144ES	
Q124	8-729-245-83	TRANSISTOR 2SC2458	
Q125	8-729-900-89	TRANSISTOR DTC144ES	
Q126	8-729-900-89	TRANSISTOR DTC144ES	
Q127	8-729-900-89	TRANSISTOR DTC144ES	
Q128	8-729-900-89	TRANSISTOR DTC144ES	
Q129	8-729-900-89	TRANSISTOR DTC144ES	
Q130	8-729-900-80	TRANSISTOR DTC114ES	
Q131	8-729-900-36	TRANSISTOR DTC124ES	
Q135	8-729-245-83	TRANSISTOR 2SC2458	
Q137	8-729 900-89	TRANSISTOR DTC144ES	
Q151	8-729-900-89	TRANSISTOR DTC144ES	
Q201	8-729-245-83	TRANSISTOR 2SC2458	
Q202	8-729-245-83	TRANSISTOR 2SC2458	
Q203	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q204	8-729-245-83	TRANSISTOR 2SC2458	
Q205	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q206	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q207	8-729 900-89	TRANSISTOR DTC144ES	
Q211	8-729-900-65	TRANSISTOR DTA144ES	
Q212	8-729-900-65	TRANSISTOR DTA144ES	
Q213	8-729-900-89	TRANSISTOR DTC144ES	
Q214	8-729-900-89	TRANSISTOR DTC144ES	
Q215	8-729-900-65	TRANSISTOR DTA144ES	
Q219	8-729-900-89	TRANSISTOR DTC144ES	
Q221	8-729-900-89	TRANSISTOR DTC144ES	
Q301	8-729-115-30	TRANSISTOR 2SK105A-30	
Q302	8-729-115-30	TRANSISTOR 2SK105A-30	
Q303	8-729-115-30	TRANSISTOR 2SK105A-30	
Q304	8-729-115-30	TRANSISTOR 2SK105A-30	
Q307	8-729 115-30	TRANSISTOR 2SK105A-30	
Q401	8-729-900-89	TRANSISTOR DTC144ES	
Q402	8-729-900-89	TRANSISTOR DTC144ES	

RESISTOR

R002	1-249-429-11	CARBON	10K	5%	1/6W	
R003	1-247-895-00	CARBON	470K	5%	1/6W	
R008	1-247-847-00	CARBON	4.7K	5%	1/6W	
R010	1-247-831-00	CARBON	1K	5%	1/6W	
R028	1-247-899-00	CARBON	680K	5%	1/6W	
R099	1-247-831-00	CARBON	1K	5%	1/6W	
R100	1-249-429-11	CARBON	10K	5%	1/6W	
R101	1-249-437-11	CARBON	47K	5%	1/6W	
R102	1-247-859-00	CARBON	15K	5%	1/6W	
R103	1-247-853-00	CARBON	8.2K	5%	1/6W	
R104	1-247-847-00	CARBON	4.7K	5%	1/6W	
R105	1-247-843-00	CARBON	3.3K	5%	1/6W	
R106	1-249-421-11	CARBON	2.2K	5%	1/6W	
R107	1-247-837-00	CARBON	1.8K	5%	1/6W	
R108	1-247-857-00	CARBON	12K	5%	1/6W	
R119	1-249-429-11	CARBON	10K	5%	1/6W	
R120	1-247-823-00	CARBON	470	5%	1/6W	
R121	1-249-429-11	CARBON	10K	5%	1/6W	
R131	1-247-831-00	CARBON	1K	5%	1/6W	
R132	1-247-831-00	CARBON	1K	5%	1/6W	
R135	1-247-843-00	CARBON	3.3K	5%	1/6W	
R136	1-249-429-11	CARBON	10K	5%	1/6W	
R138	1-249-429-11	CARBON	10K	5%	1/6W	
R139	1-249-429-11	CARBON	10K	5%	1/6W	
R145	1-247-857-00	CARBON	12K	5%	1/6W	
R155	1-247-879-00	CARBON	100K	5%	1/6W	
R166	1-249-429-11	CARBON	10K	5%	1/6W	
R167	1-249-437-11	CARBON	47K	5%	1/6W	
R168	1-249-437-11	CARBON	47K	5%	1/6W	
R169	1-249-437-11	CARBON	47K	5%	1/6W	
R172	1-249-429-11	CARBON	10K	5%	1/6W	
R173	1-247-831-00	CARBON	1K	5%	1/6W	
R174	1-249-437-11	CARBON	47K	5%	1/6W	
R175	1-247-879-00	CARBON	100K	5%	1/6W	
R176	1-247-847-00	CARBON	4.7K	5%	1/6W	
R179	1-247-879-00	CARBON	100K	5%	1/6W	
R184	1-247-831-00	CARBON	1K	5%	1/6W	
R185	1-247-831-00	CARBON	1K	5%	1/6W	
R186	1-247-831-00	CARBON	1K	5%	1/6W	
R187	1-247-831-00	CARBON	1K	5%	1/6W	
R188	1-247-831-00	CARBON	1K	5%	1/6W	
R189	1-247-831-00	CARBON	1K	5%	1/6W	
R190	1-247-831-00	CARBON	1K	5%	1/6W	
R191	1-247-831-00	CARBON	1K	5%	1/6W	
R192	1-247-831-00	CARBON	1K	5%	1/6W	
R193	1-247-831-00	CARBON	1K	5%	1/6W	
R194	1-247-831-00	CARBON	1K	5%	1/6W	
R195	1-249-421-11	CARBON	2.2K	5%	1/6W	
R196	1-247-821-00	CARBON	390	5%	1/6W	
R202	1-247-843-00	CARBON	3.3K	5%	1/6W	
R203	1-249-434-11	CARBON	27K	5%	1/6W	
R206	1-247-853-00	CARBON	8.2K	5%	1/6W	
R207	1-247-849-00	CARBON	5.6K	5%	1/6W	
R208	1-247-849-00	CARBON	5.6K	5%	1/6W	
R209	1-247-863-00	CARBON	22K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R210	1-247-873-00	CARBON	56K	5%	1/6W	
R211	1-247-869-00	CARBON	39K	5%	1/6W	
R212	1-247-867-00	CARBON	33K	5%	1/6W	
R213	1-247-843-00	CARBON	3.3K	5%	1/6W	
R214	1-247-861-00	CARBON	18K	5%	1/6W	
R231	1-249-434-11	CARBON	27K	5%	1/6W	
R232	1-247-869-00	CARBON	39K	5%	1/6W	
R235	1-249-434-11	CARBON	27K	5%	1/6W	
R236	1-247-879-00	CARBON	100K	5%	1/6W	
R242	1-247-879-00	CARBON	100K	5%	1/6W	
R243	1-249-429-11	CARBON	10K	5%	1/6W	
R246	1-249-437-11	CARBON	47K	5%	1/6W	
R260	1-249-429-11	CARBON	10K	5%	1/6W	
R272	1-249-437-11	CARBON	47K	5%	1/6W	
R275	1-249-429-11	CARBON	10K	5%	1/6W	
R280	1-247-849-00	CARBON	5.6K	5%	1/6W	
R284	1-247-847-00	CARBON	4.7K	5%	1/6W	
R295	1-247-899-00	CARBON	680K	5%	1/6W	
R286	1-249-437-11	CARBON	47K	5%	1/6W	
R294	1-247-845-00	CARBON	3.9K	5%	1/6W	
R295	1-247-859-00	CARBON	15K	5%	1/6W	
R301	1-249-437-11	CARBON	47K	5%	1/6W	
R302	1-249-429-11	CARBON	10K	5%	1/6W	
R303	1-249-429-11	CARBON	10K	5%	1/6W	
R304	1-249-437-11	CARBON	47K	5%	1/6W	
R307	1-249-429-11	CARBON	10K	5%	1/6W	
R310	1-247-879-00	CARBON	100K	5%	1/6W	
R311	1-247-879-00	CARBON	100K	5%	1/6W	
R318	1-247-863-00	CARBON	22K	5%	1/6W	
R319	1-247-857-00	CARBON	12K	5%	1/6W	
R327	1-247-891-00	CARBON	330K	5%	1/6W	
R328	1-247-867-00	CARBON	33K	5%	1/6W	
R350	1-247-879-00	CARBON	100K	5%	1/6W	
R351	1-247-863-00	CARBON	22K	5%	1/6W	
R404	1-249-437-11	CARBON	47K	5%	1/6W	
R408	1-249-437-11	CARBON	47K	5%	1/6W	
R409	1-247-893-00	CARBON	390K	5%	1/6W	
R410	1-247-895-00	CARBON	470K	5%	1/6W	
R425	1-249-429-11	CARBON	10K	5%	1/6W	
R501	1-247-863-00	CARBON	22K	5%	1/6W	
R502	1-249-429-11	CARBON	10K	5%	1/6W	
R503	1-247-881-00	CARBON	120K	5%	1/6W	
R504	1-247-831-00	CARBON	1K	5%	1/6W	
R604	1-247-807-00	CARBON	100	5%	1/6W	

VARIABLE RESISTOR

RV201	1-228-995-00	RES, ADJ, METAL GLAZE	22K			
RV202	1-228-995-00	RES, ADJ, METAL GLAZE	22K			
RV203	1-228-998-00	RES, ADJ, METAL GLAZE	220K			
RV301	1-228-996-00	RES, ADJ, METAL GLAZE	47K			
RV401	1-228-997-00	RES, ADJ, METAL GLAZE	100K			
RV402	1-228-997-00	RES, ADJ, METAL GLAZE	100K			
RV501	1-228-997-00	RES, ADJ, METAL GLAZE	100K			

Ref.No	Part No.	Description				Remark
RV601	1-230-660-11	RES, VAR, CARBON 1K				

SWITCH

S101	1-570-157-11	SWITCH, SLIDE				
S102	1-554-174-00	SWITCH, KEY BOARD				
S103	1-554-174-00	SWITCH, KEY BOARD				
S104	1-554-174-00	SWITCH, KEY BOARD				
S105	1-554-174-00	SWITCH, KEY BOARD				

CRYSTAL

X101	1-567-346-11	OSCILLATOR, CERAMIC				
X102	1-527-965-00	OSCILLATOR, CERAMIC				

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	*A-7060-141-A	TA-29A BOARD, COMPLETE (AEP MODEL)				
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	*A-7060-164-A	TA-29B BOARD, COMPLETE (UK MODEL)				
		**********				
	*1-463-571-31	TUNER, ET-BT-203AD (AEP MODEL)				
	*1-463-595-21	TUNER, ET-BT-203AD (UK MODEL)				
	*3-689-075-01	LID, REAR, SHIELD CASE, AL				
	*4-336-029-00	PLATE, SHIELD				

CAPACITOR

C001	1-102-531-00	CERAMIC	150PF	5%	50V
C002	1-102-530-00	CERAMIC	120PF	5%	50V
C003	1-102-518-00	CERAMIC	33PF	5%	50V
C004	1-102-851-00	CERAMIC	15PF	5%	50V
C005	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C006	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C007	1-102-126-00	CERAMIC	0.0047MF	10%	50V
C008	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C009	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C010	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C011	1-123-379-00	ELECT	0.47MF	20%	50V
C012	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C013	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C014	1-123-318-00	ELECT	33MF	20%	16V
C015	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C016	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C017	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C018	1-102-529-00	CERAMIC	100PF	5%	50V
C019	1-102-504-00	CERAMIC	4PF	0.25PF	50V
C020	1-102-518-00	CERAMIC	33PF	5%	50V
C021	1-102-504-00	CERAMIC	4PF	0.25PF	50V
C022	1-102-529-00	CERAMIC	100PF	5%	50V
C023	1-102-518-00	CERAMIC	33PF	5%	50V
C025	1-123-307-00	ELECT	100MF	20%	10V
C026	1-102-108-00	CERAMIC	150PF	10%	50V
C027	1-123-369-00	ELECT	4.7MF	20%	25V
C028	1-102-959-00	CERAMIC	22PF	5%	50V
C029	1-102-959-00	CERAMIC	22PF	5%	50V

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TA-29A/B

Ref.No	Part No.	Description			Remark
C030	1-101-004-00	CERAMIC	0.01MF		50V
C031	1-101-004-00	CERAMIC	0.01MF		50V
C032	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C033	1-102-959-00	CERAMIC	22PF	5%	50V
C034	1-101-004-00	CERAMIC	0.01MF		50V
C035	1-123-318-00	ELECT	33MF	20%	16V
C036	1-108-807-00	MYLAR	0.018MF	5%	50V
C037	1-123-356-00	ELECT	10MF	20%	16V
C038	1-108-599-00	MYLAR	0.068MF	5%	50V
C039	1-108-599-00	MYLAR	0.068MF	5%	50V
C040	1-102-963-00	CERAMIC	33PF	5%	50V
C041	1-123-318-00	ELECT	33MF	20%	16V
C042	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C043	1-123-369-00	ELECT	4.7MF	20%	25V
C044	1-123-380-00	ELECT	1MF	20%	50V (AEP MODEL)
C045	1-123-380-00	ELECT	1MF	20%	50V (AEP MODEL)
C046	1-123-380-00	ELECT	1MF	20%	50V (AEP MODEL)
C047	1-123-318-00	ELECT	33MF	20%	16V
C048	1-123-330-00	ELECT	22MF	20%	16V
C050	1-102-106-00	CERAMIC	100PF	10%	50V
C051	1-108-603-00	MYLAR	0.1MF	5%	50V
C052	1-123-356-00	ELECT	10MF	20%	50V
C053	1-123-332-00	ELECT	47MF	20%	16V
C056	1-123-381-00	ELECT	2.2MF	20%	50V
C057	1-102-074-00	CERAMIC	0.001MF	10%	50V
C058	1-123-356-00	ELECT	10MF	20%	16V
C059	1-123-356-00	ELECT	10MF	20%	16V
C060	1-101-004-00	CERAMIC	0.01MF		50V
C061	1-123-318-00	ELECT	33MF	20%	16V
C062	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C063	1-123-356-00	ELECT	10MF	20%	16V
C064	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C066	1-108-603-00	MYLAR	0.1MF	5%	50V
C067	1-123-307-00	ELECT	100MF	20%	10V
C068	1-123-330-00	ELECT	22MF	20%	16V
C069	1-161-025-00	CERAMIC	0.1MF	10%	25V
C070	1-101-004-00	CERAMIC	0.01MF		50V
C071	1-102-113-00	CERAMIC	390PF	10%	50V
C072	1-102-114-00	CERAMIC	470PF	10%	50V
C073	1-106-172-00	MYLAR	0.001MF	5%	50V
C074	1-123-379-00	ELECT	0.47MF	20%	50V
C075	1-123-356-00	ELECT	10MF	20%	16V
C076	1-102-112-00	CERAMIC	330PF	10%	50V
C077	1-102-520-00	CERAMIC	39PF	5%	50V
C501	1-123-307-00	ELECT	100MF	20%	6.3V
C502	1-123-330-00	ELECT	22MF	20%	16V
C503	1-123-356-00	ELECT	10MF	20%	16V
C504	1-123-380-00	ELECT	1MF	20%	50V
C505	1-123-356-00	ELECT	10MF	20%	16V
C506	1-130-482-00	MYLAR	0.0082MF	5%	50V

Ref.No	Part No.	Description			Remark
C507	1-102-116-00	CERAMIC	680PF	10%	50V
C508	1-136-169-00	MYLAR	0.039MF	5%	50V
C509	1-102-978-00	CERAMIC	220PF	5%	50V
C510	1-102-942-00	CERAMIC	5PF	1PF	50V
C511	1-130-479-00	MYLAR	0.0047MF	5%	50V
C513	1-102-824-00	CERAMIC	470PF	5%	50V
C514	1-123-308-00	ELECT	220MF	20%	6.3V
C516	1-123-307-00	ELECT	100MF	20%	6.3V
C517	1-123-381-00	ELECT	2.2MF	20%	50V
C518	1-161-013-00	CERAMIC	0.01MF	10%	25V
C519	1-130-475-00	MYLAR	0.0022MF	5%	50V
C520	1-130-478-00	MYLAR	0.0039MF	5%	50V
C521	1-102-978-00	CERAMIC	220PF	5%	50V
C522	1-130-473-00	MYLAR	0.0015MF	5%	50V
C523	1-123-379-00	ELECT	0.47MF	20%	50V
C524	1-102-116-00	CERAMIC	680PF	10%	50V
C525	1-161-013-00	CERAMIC	0.01MF	10%	25V
C526	1-161-013-00	CERAMIC	0.01MF	10%	25V
C527	1-161-013-00	CERAMIC	0.01MF	10%	25V
C528	1-130-475-00	MYLAR	0.0022MF	5%	50V
C529	1-101-880-00	CERAMIC	47PF	5%	50V
C530	1-123-380-00	ELECT	1MF	20%	50V
C531	1-123-307-00	ELECT	100MF	20%	6.3V
C532	1-161-013-00	CERAMIC	0.01MF	10%	25V
C533	1-161-013-00	CERAMIC	0.01MF	10%	25V
C534	1-161-013-00	CERAMIC	0.01MF	10%	25V
C535	1-161-013-00	CERAMIC	0.01MF	10%	25V
C537	1-123-380-00	ELECT	1MF	20%	50V
C541	1-123-369-00	ELECT	4.7MF	20%	25V
C542	1-130-477-00	MYLAR	0.0033MF	5%	50V
C550	1-161-059-00	CERAMIC	0.047MF	10%	25V
C701	1-123-306-00	ELECT	47MF	20%	6.3V
C705	1-162-268-31	CERAMIC	330PF	10%	50V
C706	1-123-356-00	ELECT	10MF	20%	16V

DISCRIMINATOR

CD001	1-404-380-00	DISCRIMINATOR, CERAMIC 5.5MHZ

FILTER

CF001	1-527-262-00	CERAMIC FILTER (6.0MHZ) (UK MODEL)
CF001	1-527-263-00	CERAMIC FILTER (5.5MHZ) (AEP MODEL)

CONNECTOR

CN001	*1-560-890-00	PIN, CONNECTOR 2P
CN006	*1-560-890-00	PIN, CONNECTOR 2P
CN007	*1-560-893-00	PIN, CONNECTOR 5P
CN501	*1-560-893-00	PIN, CONNECTOR 5P
CN502	*1-560-894-00	PIN, CONNECTOR 6P

COMPOSITION CIRCUIT BLOCK

CP501	1-232-788-11	COMPOSITION CIRCUIT BLOCK

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		TRIMMER	
CT001	1-404-134-00	TRAP, CERAMIC (5.5MHZ) (AEP MODEL)	
CT001	1-409-333-00	TRAP, CERAMIC (6.0MHZ) (UK MODEL)	
		DIODE	
D001	8-719-911-19	DIODE 1SS119	
D003	8-719-911-19	DIODE 1SS119	
D005	8-719-911-19	DIODE 1SS119	
D006	8-719-911-19	DIODE 1SS119	
D007	8-719-911-19	DIODE 1SS119	
D008	8-719-911-19	DIODE 1SS119	
D502	8-719-911-19	DIODE 1SS119	
D701	8-719-812-41	DIODE TLR124	
		FILTER	
FL501	1-235-484-11	FILTER, BAND PASS (1.5MHZ)	
		IC	
IC001	8-759-602-16	IC M54572L (AEP MODEL)	
IC002	8-759-276-07	IC TA7607AP	
IC003	8-759-103-70	IC UPC1391HA	
IC004	8-759-157-40	IC UPC574J	
IC005	8-759-729-03	IC NJM2903D	
IC006	8-759-040-46	IC MC14046BCP	
IC501	8-752-013-70	IC CX20137	
		COIL	
L001	1-404-476-00	COIL, IF	
L002	1-404-476-00	COIL, IF	
L003	1-408-591-00	MICRO INDUCTOR 1UH	
L004	1-408-600-00	MICRO INDUCTOR 5.6UH	
L005	1-404-522-11	VIFT	
L006	1-408-600-00	MICRO INDUCTOR 5.6UH	
L007	1-404-521-21	VIFT	
L008	1-404-521-21	VIFT	
L009	1-408-408-00	MICRO INDUCTOR 8.2UH	
L010	1-408-623-00	MICRO INDUCTOR 470UH	
L011	1-408-409-00	MICRO INDUCTOR 10UH	
L012	1-408-412-00	MICRO INDUCTOR 18UH	
L013	1-408-413-00	MICRO INDUCTOR 22UH	
L501	1-408-425-00	MICRO INDUCTOR 220UH	
L502	1-408-425-00	MICRO INDUCTOR 220UH	
		TRANSISTOR	
Q001	8-729-105-47	TRANSISTOR 2SC2026	
Q002	8-729-117-54	TRANSISTOR 2SA1175	
Q003	8-729-245-83	TRANSISTOR 2SC2458	
Q004	8-729-245-83	TRANSISTOR 2SC2458	
Q005	8-729-245-83	TRANSISTOR 2SC2458	
Q006	8-729-603-30	TRANSISTOR 2SC4033SP-3	
Q007	8-729-245-83	TRANSISTOR 2SC2458	
Q008	8-729-900-89	TRANSISTOR DTC144ES (AEP MODEL)	

Ref.No	Part No.	Description	Remark
Q009	8-729-245-83	TRANSISTOR 2SC2458	
Q010	8-729-117-54	TRANSISTOR 2SA1175	
Q011	8-729-245-83	TRANSISTOR 2SC2458	
Q012	8-729-178-54	TRANSISTOR 2SC2785	
Q015	8-729-900-36	TRANSISTOR DTC124ES	
Q016	8-729-113-33	TRANSISTOR 2SB733-4	
Q017	8-729-900-36	TRANSISTOR DTC124ES	
Q018	8-729-245-83	TRANSISTOR 2SC2458	
Q501	8-729-900-89	TRANSISTOR DTC144ES	
Q502	8-729-178-54	TRANSISTOR 2SC2785	
Q703	8-729-178-54	TRANSISTOR 2SC2785	
Q704	8-729-178-54	TRANSISTOR 2SC2785	
Q706	8-729-178-54	TRANSISTOR 2SC2785	
Q707	8-729-117-54	TRANSISTOR 2SA1175	

RESISTOR

R001	1-249-429-11	CARBON	10K	5%	1/6W
R002	1-247-863-00	CARBON	22K	5%	1/6W
R003	1-247-847-00	CARBON	4.7K	5%	1/6W
R004	1-247-815-00	CARBON	220	5%	1/6W
R005	1-247-825-00	CARBON	560	5%	1/6W
R006	1-247-847-00	CARBON	4.7K	5%	1/6W
R007	1-247-823-00	CARBON	470	5%	1/6W
R008	1-247-837-00	CARBON	1.8K	5%	1/6W
R009	1-247-901-00	CARBON	820K	5%	1/6W
R010	1-247-833-00	CARBON	1.2K	5%	1/6W
R011	1-247-815-00	CARBON	220	5%	1/6W
R012	1-247-831-00	CARBON	1K	5%	1/6W
R013	1-249-421-11	CARBON	2.2K	5%	1/6W
R014	1-247-833-00	CARBON	1.2K	5%	1/6W
R015	1-247-875-00	CARBON	68K	5%	1/6W
R016	1-247-831-00	CARBON	1K	5%	1/6W
R017	1-247-831-00	CARBON	1K	5%	1/6W
R018	1-247-843-00	CARBON	3.3K	5%	1/6W
R019	1-247-831-00	CARBON	1K	5%	1/6W
R020	1-247-891-00	CARBON	330K	5%	1/6W
R021	1-247-831-00	CARBON	1K	5%	1/6W
R022	1-247-817-00	CARBON	270	5%	1/6W
R023	1-247-821-00	CARBON	390	5%	1/6W
R024	1-247-847-00	CARBON	4.7K	5%	1/6W
R025	1-247-831-00	CARBON	1K	5%	1/6W
R026	1-247-879-00	CARBON	100K	5%	1/6W
R027	1-247-867-00	CARBON	33K	5%	1/6W
R028	1-247-843-00	CARBON	3.3K	5%	1/6W

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TA-29A/B

Ref.No	Part No.	Description				Remark
R030	1-247-891-00	CARBON	330K	5%	1/6W	
R031	1-249-421-11	CARBON	2.2K	5%	1/6W	
R032	1-247-877-00	CARBON	82K	5%	1/6W	
R033	1-247-879-00	CARBON	100K	5%	1/6W	
R034	1-247-879-00	CARBON	100K	5%	1/6W	
R035	1-249-429-11	CARBON	10K	5%	1/6W	
R036	1-247-863-00	CARBON	22K	5%	1/6W	
R037	1-249-429-11	CARBON	10K	5%	1/6W	
R038	1-249-421-11	CARBON	2.2K	5%	1/6W	
R039	1-247-719-11	CARBON	3.3K	5%	1/4W	
R040	1-247-863-00	CARBON	22K	5%	1/6W	
R041	1-247-863-00	CARBON	22K	5%	1/6W	
R042	1-247-863-00	CARBON	22K	5%	1/6W	
R043	1-247-863-00	CARBON	22K	5%	1/6W	
R044	1-249-434-11	CARBON	27K	5%	1/6W	
R045	1-247-857-00	CARBON	12K	5%	1/6W	
R046	1-247-859-00	CARBON	15K	5%	1/6W	
R047	1-247-863-00	CARBON	22K	5%	1/6W	
R048	1-249-429 11	CARBON	10K	5%	1/6W	
R049	1-247-849-00	CARBON	5.6K	5%	1/6W	
R050	1-247-831-00	CARBON	1K	5%	1/6W	
R051	1-247-903-00	CARBON	1M	5%	1/6W	
R052	1-247-863-00	CARBON	22K	5%	1/6W	
R053	1-247-883-00	CARBON	150K	5%	1/6W	
R054	1-247-887-00	CARBON	220K	5%	1/6W	
R056	1-247-863-00	CARBON	22K	5%	1/6W	
R057	1-249-421-11	CARBON	2.2K	5%	1/6W	
R058	1-249-429-11	CARBON	10K	5%	1/6W	
R059	1-247-899-00	CARBON	680K	5%	1/6W	
R065	1-247-867-00	CARBON	33K	5%	1/6W	
R066	1-247-849-00	CARBON	5.6K	5%	1/6W	
R067	1-247-819-00	CARBON	330	5%	1/6W(AEP MODEL)	
R068	1-247-885-00	CARBON	180K	5%	1/6W	
R069	1-249-437-11	CARBON	47K	5%	1/6W	
R070	1-249-429-11	CARBON	10K	5%	1/6W	
R071	1-247-837-00	CARBON	1.8K	5%	1/6W	
R072	1-247-831-00	CARBON	1K	5%	1/6W	
R076	1-247-831-00	CARBON	1K	5%	1/6W	
R077	1-247-835-00	CARBON	1.5K	5%	1/6W	
R078	1-247-831-00	CARBON	1K	5%	1/6W	
R079	1-247-841-00	CARBON	2.7K	5%	1/6W	
R081	1-247-837-00	CARBON	1.8K	5%	1/6W	
R082	1-247-775-00	CARBON	4.7	5%	1/6W	
R083	1-247-831-00	CARBON	1K	5%	1/6W	
R084	1-247-803-00	CARBON	68	5%	1/6W	
R087	1-247-865-00	CARBON	27K	5%	1/6W	
R088	1-247-865-00	CARBON	27K	5%	1/6W(AEP MODEL)	
R501	1-247-851-00	CARBON	6.8K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R502	1-249-429-11	CARBON	10K	5%	1/6W	
R503	1-247-843-00	CARBON	3.3K	5%	1/6W	
R504	1-247-843-00	CARBON	3.3K	5%	1/6W	
R505	1-247-841-00	CARBON	2.7K	5%	1/6W	
R506	1-249-421-11	CARBON	2.2K	5%	1/6W	
R507	1-247-841-00	CARBON	2.7K	5%	1/6W	
R508	1-247-827-00	CARBON	680	5%	1/6W	
R509	1-247-857-00	CARBON	12K	5%	1/6W	
R510	1-247-845-00	CARBON	3.9K	5%	1/6W	
R512	1-247-829-00	CARBON	820	5%	1/6W	
R513	1-247-829-00	CARBON	820	5%	1/6W	
R517	1-249-047-00	CARBON	4.7K	5%	1/6W	
R518	1-247-889-00	CARBON	270K	5%	1/6W	
R519	1-247-903-00	CARBON	1M	5%	1/6W	
R523	1-247-864-00	CARBON	24K	5%	1/6W	
R524	1-249-434-11	CARBON	27K	5%	1/6W	
R525	1-247-861-00	CARBON	18K	5%	1/6W	
R526	1-247-863-00	CARBON	22K	5%	1/6W	
R527	1-247-861-00	CARBON	18K	5%	1/6W	
R528	1-249-421-11	CARBON	2.2K	5%	1/6W	
R529	1-249-437-11	CARBON	47K	5%	1/6W	
R531	1-249-421-11	CARBON	2.2K	5%	1/6W	
R532	1-247-843-00	CARBON	3.3K	5%	1/6W	
R533	1-247-831-00	CARBON	1K	5%	1/6W	
R535	1-247-845-00	CARBON	3.9K	5%	1/6W	
R536	1-247-831-00	CARBON	1K	5%	1/6W	
R537	1-247-867-00	CARBON	33K	5%	1/6W	
R538	1-247-875-00	CARBON	68K	5%	1/6W	
R539	1-247-831-00	CARBON	1K	5%	1/6W	
R541	1-249-429-11	CARBON	10K	5%	1/6W	
R543	1-247-047-00	CARBON	4.7K	5%	1/6W	
R552	1-247-851-00	CARBON	6.8K	5%	1/6W	
R553	1-247-831-00	CARBON	1K	5%	1/6W	
R554	1-249-437-11	CARBON	47K	5%	1/6W	
R555	1-249-437-11	CARBON	47K	5%	1/6W	
R556	1-247-837-00	CARBON	1.8K	5%	1/6W	
R557	1-247-845-00	CARBON	3.9K	5%	1/6W	
R564	1-247-861-00	CARBON	18K	5%	1/6W	
R592	1-247-867-00	CARBON	33K	5%	1/6W	
R593	1-247-867-00	CARBON	33K	5%	1/6W	
R701	1-247-821-00	CARBON	390	5%	1/6W	
R702	1-247-821-00	CARBON	390	5%	1/6W	
R703	1-247-807-00	CARBON	100	5%	1/6W	
R704	1-247-807-00	CARBON	100	5%	1/6W	
R705	1-247-879-00	CARBON	100K	5%	1/6W	
R706	1-247-833-00	CARBON	1.2K	5%	1/6W	
R707	1-247-821-00	CARBON	390	5%	1/6W	
R708	1-247-879-00	CARBON	100K	5%	1/6W	
R717	1-247-845-00	CARBON	3.9K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R718	1-247-807-00	CARBON 100 5% 1/6W	
R719	1-247-791-00	CARBON 22 5% 1/6W	
R720	1-247-831-00	CARBON 1K 5% 1/6W	
R721	1-247-819-00	CARBON 330 5% 1/6W	
R722	1-247-783-00	CARBON 10 5% 1/6W	
		VARIABLE RESISTOR	
RV001	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV501	1-228-995-00	RES, ADJ, CARBON 22K	
RV502	1-228-994-00	RES, ADJ, CARBON 10K	
RV503	1-228-993-00	RES, ADJ, CARBON 4.7K	
		FILTER	
SF001	1-404-433-00	SAWF	
		**********	
		LS-9 BOARD	
		**********	
		CONNECTOR	
CN904	*1-564-613-21	PIN, CONNECTOR (HOOK TYPE)	
		**********	
	*1-615-312-11	PW-10A BOARD	
		**********	
	*3-689-028-01	HOLDER, LED	
		DIODE	
D101	8-719-919-57	DIODE GL-9E62	
D102	8-719-904-92	DIODE GL-9HY2	
		RESISTOR	
R101	1-247-817-00	CARBON 270 5% 1/6W	
		SWITCH	
S101	1-554-174-00	SWITCH, KEY BOARD (POWER)	
S102	1-554-174-00	SWITCH, KEY BOARD (EJECT)	
		**********	
	*1-615-316-11	TE-1A BOARD	
		**********	
	*3-689-011-01	HOLDER, SENSOR	
		TRANSISTOR	
Q004	8-729-700-08	TRANSISTOR NJL7141E	
		**********	

Ref.No	Part No.	Description	Remark
	*1-615-317-11	TE-2A BOARD	
		**********	
	*3-689-011-01	HOLDER, SENSOR	
		PILOT LAMP	
PL001	1-518-575-21	LAMP, PILOT	
PL002	1-518-575-21	LAMP, PILOT	
		TRANSISTOR	
Q003	8-729-700-08	TRANSISTOR NJL7141E	
		SWITCH	
S001	1-563-226-00	SWITCH, LEAF	
		**********	
	1-613-367-11	LD-1 BOARD	
		**********	
		DIODE	
D001	8-719-912-46	DIODE GL-450	
		**********	
	*1-615-309-13	RS-11A BOARD	
		**********	
	*3-689-076-01	HOLDER, REEL SENSOR	
		DIODE	
PH001	8-719-751-42	DIODE NJL5141E	
PH002	8-719-751-42	DIODE NJL5141E	
PH003	8-719-751-42	DIODE NJL5141E	
		**********	
	*A-7070-055-A	MS-4 BOARD, COMPLETE	
		**********	
	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
		**********	
	*1-616-182-12	PS-68A BOARD	
		**********	
		CIODE	
D401	8-719-100-69	DIODE RD13E3	
		TRANSISTOR	
Q401	8-729-202-02	TRANSISTOR 2SB1015	
Q402	8-729-177-32	TRANSISTOR 2SD773	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

PS-68A PS-51A/B PS-52A

Ref.No	Part No.	Description	Remark
		RESISTOR	
R401	⚠ 1-247-855-00	CARBON 10K 5% 1/6W	
		**********	
	*A-7070-105-A	PS-51A BOARD, COMPLETE (AEP MODEL) **********	
	*A-7070-122-A	PS-51B BOARD, COMPLETE (UK MODEL) **********	
	1-533-162-00	HOLDER, FUSE	
	⚠ 3-436-344-01	COVER (CC-117), INSULATING (AEP MODEL)	
	⚠ 3-691-946-01	COVER, SQUARE CAPACITOR	
		CAPACITOR	
C101	⚠ 1-130-710-00	FILM 0.1MF 20% 250V	
C104	1-123-359-00	ELECT 47MF 20% 50V	
C105	1-123-356-00	ELECT 10MF 20% 16V	
C106	1-123-360-00	ELECT 1MF 20% 50V	
C107	1-123-349-00	ELECT 1000MF 20% 35V	
C109	1-123-380-00	ELECT 1MF 20% 50V	
C110	⚠ 1-161-742-00	CERAMIC 0.0022MF 20% 400V (AEP MODEL)	
C111	⚠ 1-161-742-00	CERAMIC 0.0022MF 20% 400V (AEP MODEL)	
C112	⚠ 1-161-742-00	CERAMIC 0.0022MF 20% 400V (AEP MODEL)	
C113	1-123-346-00	ELECT 220MF 20% 35V	
C114	1-123-374-00	ELECT 100MF 20% 63V	
C115	1-123-346-00	ELECT 220MF 20% 35V	
C116	1-123-374-00	ELECT 100MF 20% 63V	
C117	1-123-356-00	ELECT 10MF 20% 16V	
C118	⚠ 1-161-742-00	CERAMIC 0.0022MF 20% 400V (AEP MODEL)	
		CONNECTOR	
CN101	*1-560-893-00	PIN, CONNECTOR 5P	
CN102	*1-560-892-00	PIN, CONNECTOR 4P	
		DIODE	
D102	8-719-911-19	DIODE 1SS119	
D103	8-719-101-02	DIODE RD30EB4	
D104	8-719-100-38	DIODE RD6.2EB2	
D106	⚠ 8-719-982-04	DIODE ERB81-004	
D107	⚠ 8-719-982-04	DIODE ERB81-004	
D108	8-719-200-02	DIODE 10E-2	
D109	8-719-200-02	DIODE 10E-2	
D110	8-719-200-02	DIODE 10E-2	
D111	8-719-200-02	DIODE 10E-2	
D112	8-719-911-19	DIODE 1SS119	

Ref.No	Part No.	Description	Remark
D115	8-719-101-24	DIODE RD39EB2	
		FUSE	
F101	⚠ 1-532-614-00	FUSE, TIME-LAG	
		IC	
IC101	8-759-170-12	IC UPC78M12H	
		IC LINK	
PS101	⚠ 1-532-605-00	LINK, IC	
		TRANSISTOR	
Q101	8-729-202-02	TRANSISTOR 2SB1015	
Q104	8-729-245-83	TRANSISTOR 2SC2458	
		RESISTOR	
R104	1-249-429-11	CARBON 10K 5% 1/6W	
R105	1-247-149-00	CARBON 5.6K 5% 1/4W	
R110	1-247-694-11	CARBON 33 5% 1/4W	
R111	1-249-429-11	CARBON 10K 5% 1/6W	
		TRANSFORMER	
T102	⚠ 1-421-357-31	TRANSFORMER, LINE FILTER	
		THERMISTOR	
THP101	⚠ 1-806-894-11	THERMISTOR (POSITIVE)	
		**********	
	*A-7070-106-A	PS-52A BOARD, COMPLETE **********	
	1-533-162-00	HOLDER, FUSE	
		CAPACITOR	
C201	1-123-333-00	ELECT 100MF 20% 25V	
C202	1-123-332-00	ELECT 47MF 20% 16V	
C203	1-123-306-00	ELECT 47MF 20% 10V	
C204	1-125-298-00	ELECT(BLOCK) 10000MF 20% 25V	
C205	1-123-333-00	ELECT 100MF 20% 16V	
C207	1-123-333-00	ELECT 100MF 20% 16V	
C209	1-123-332-00	ELECT 47MF 20% 16V	
C211	1-125-347-00	DOUBLE LAYERS 0.022F 5.5V	
C214	1-123-356-00	ELECT 10MF 20% 16V	
		CONNECTOR	
CN201	*1-560-890-00	PIN, CONNECTOR 2P	
CN203	*1-560-891-00	PIN, CONNECTOR 3P	
CN206	*1-560-890-00	PIN, CONNECTOR 2P	
CN207	*1-560-895-00	PIN, CONNECTOR 7P	
CN208	*1-560-892-00	PIN, CONNECTOR 4P	
CN209	*1-564-031-00	PIN, CONNECTOR 5P	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		DIODE	
D201	8-719-500-09	DIODE D5F820F	
D202	8-719-100-58	DIODE RD10EB3	
D203	8-719-100-58	DIODE RD10EB3	
D204	8-719-100-39	DIODE RD6.2EB3	
D205	8-719-200-02	DIODE 10E-2	
D206	8-719-200-02	DIODE 10E-2	
D207	8-719-911-19	DIODE 1SS119	
D208	8-719-911-19	DIODE 1SS119	
		FUSE	
F201	1-532-259-00	FUSE, TIME-LAG	
F202	1-532-203-00	FUSE, TIME-LAG	
		IC	
IC201	8-759-801-26	IC L78M06	
		IC LINK	
PS201	1-532-605-00	LINK, IC	
		TRANSISTOR	
Q201	8-729-201-78	TRANSISTOR 2SD1406	
Q202	8-729-201-78	TRANSISTOR 2SD1406	
Q203	8-729-245-83	TRANSISTOR 2SC2458	
Q204	8-729-201-78	TRANSISTOR 2SD1406	
Q205	8-729-245-83	TRANSISTOR 2SC2458	
Q210	8-729-900-80	TRANSISTOR DTC114ES	
Q211	8-729-900-61	TRANSISTOR DTA114ES	
Q212	8-729-900-89	TRANSISTOR DTC144ES	
		RESISTOR	
R201	1-247-831-00	CARBON 1K 5% 1/6W	
R202	1-247-829-00	CARBON 820 5% 1/6W	
R203	1-247-825-00	CARBON 560 5% 1/6W	
R204	1-247-833-00	CARBON 1.2K 5% 1/6W	
R205	1-247-829-00	CARBON 820 5% 1/6W	
R206	1-247-700-11	CARBON 100 5% 1/4W	
R219	1-212-849-00	FUSIBLE 4.7 5% 1/4W	
R220	1-216-417-00	CARBON 4.7 5% 1/4W (UK MODEL)	
R221	1-247-847-00	CARBON 4.7K 5% 1/6W	
R222	1-247-697-11	CARBON 56 5% 1/4W	

****

*1-616-781-12 PS-53A BOARD
****

IC

IC301	8-759-953-62	IC SI-9962	

****

Ref.No	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
	A-7090-029-A	M-SW ASSY	
	X-3686-549-1	L-SW ASSY	
	1-454-470-11	BOOSTER MIXER, RF MODULATOR (UK MODEL)	
	1-454-471-11	BOOSTER MIXER, RF MODULATOR (AEP MODEL)	
	1-554-817-XX	CORD, POWER (AEP MODEL)	
	1-553-284-00	CORD, POWER (UK MODEL)	
	1-535-535-11	TERMINAL, SHAFT GROUND	
	*1-555-110-00	CABLE, PIN	
C901	1-616-073-11	CAP, CERAMIC 0.033MF	
M900	A-7090-030-A	MOTOR ASSY, L	
M901	8-838-094-01	MOTOR, DC (BHF-2800C) (CAPSTAN)	
M903	8-835-110-01	MOTOR, DC (DNR-5301A) (CONTROL)	
PW901	1-454-377-11	SOLENOID, PLUNGER	
S901	1-554-942-11	SWITCH, PUSH	
T901	1-448-170-11	TRANSFORMER, POWER	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
A-6765-725-A	COMMANDER ASSY RMT-409	
1-551-513-00	CORD ASSY, COAXIAL	
*3-689-589-01	CUSHION (UPPER)	
*3-689-590-01	CUSHION (LOWER)	
3-694-484-01	DRIVER, VOLUME	
*3-695-935-01	INDIVIDUAL CARTON (AEP MODEL)	
*3-695-936-01	INDIVIDUAL CARTON (UK MODEL)	
3-701-630-00	BAG, POLYETHYLENE	
3-760-268-11	MANUAL, INSTRUCTION (AEP, UK MODEL) (English)	
3-760-268-41	MANUAL, INSTRUCTION (AEP MODEL) (Spanish, Swedish, Italian)	
3-760-268-51	MANUAL, INSTRUCTION (AEP MODEL) (French, Germany, Dutch)	

****

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7
ADJUSTMENTS

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1. MECHANICAL CHECK, ADJUSTMENT AND PREPARATIONS FOR REPLACEMENT

Note: Regarding the removal procedures of the cabinet and board, see Section 2.

1-1. Cassette Compartment Assembly and Operation without Tape Inserted

Note: The set will not operate if there is a strong light source near it.

1. Loading

1) Remove the front panel and covers (upper, lower) according to item 1-1.
2) Connect a power supply and press the power button to turn on.
3) Press the EJECT button.
4) Disconnect power supply.
5) According to item Section 2, 2-3, remove the cassette compartment assembly. (Do not disconnect connector CN20 (white) 5P.)
6) Place tape over the pin coming out of the push switch ❷.
7) Connect power supply and press the power button to turn on.
8) Press door gear coupling plate ❸ in the direction of arrow Ⓐ. (Refer to Fig. 1-1)

2. Putting into Playback State

1) Perform the loading procedure in 1.
2) Place the rubber band ❹ as shown between S reel and T reel sides.
3) Place a cap ❺ over the LED assembly.
4) Press the playback button, and when the T reel side starts to rotate, press the tension regulator arm assembly ❻ in the direction of arrow Ⓑ. (At this time, the tension regulator band is released and the S reel side rotates.)
5) Press the stop button to stop. (Fig. 1-1)

3. Putting into Recording State

1) Perform the loading procedure in 1.
2) Place a rubber band ❹ as shown between the S reel and T reels.
3) Place a cap ❺ over the LED assembly.
4) Press the recording button, and when the T reel side starts to rotate, push the tension regulator arm assembly ❻ in the direction of arrow Ⓑ. (At this time, the tension regulator band is released and the S reel side rotates.)
5) Press the stop button to stop (Fig. 1-1)

4. Eject

1) Press the EJECT button. (Press the C.L. slider ❼ in the direction of arrow Ⓒ when opening the door gear coupling plate ❸.) (Fig. 1-1)

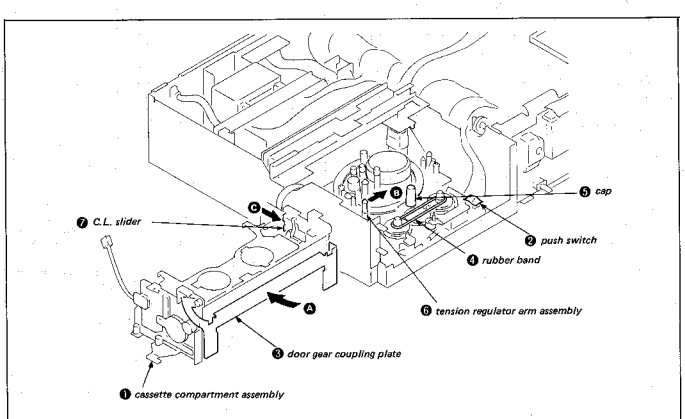


Fig. 1-1.

1-2. Handling of Mode Selector

1. Location of Parts (exterior)

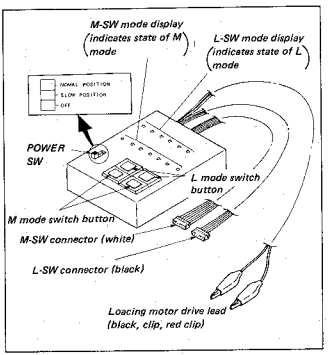

M-SW mode display (indicates state of M mode)
L-SW mode display (indicates state of L mode)
NORMAL POSITION
SLOW POSITION
OFF
POWER SW
L mode switch button
M mode switch button
M-SW connector (white)
L-SW connector (black)
Loacing motor drive lead (black, clip, red clip)

Fig. 1-2

2. Connection

1) Remove the two connectors ❶ on the SS-38C board.
2) Remove the MD-8B board according to item Section 2, 2-8.
3) Insert the M-SW connector (6P connector, 6 harness, white) ❸ into the set MS-4 board.
4) Insert the L-SW connector (6P connector, 4 harness, black) ❹ into the set LS-9 board.
5) Connect the loading motor drive lead ❺ red lead side to the loading motor red clip and the brown lead to the black clip. (Fig. 1-3)

3. Caution

1) When operating L-SW, be sure to set the M-SW mode to LOADING/UNLOADING.
2) When operating M-SW, be sure to set the L-SW mode to TOP or END.

4. Handling

BLANK ligths up regardless of L MODE or M MODE when it is in neither mode during select.

1) L MODE
   - When the L mode switch button right side is pressed continuously, the display lights up from LOADING TOP → LOADING END, in order from left to right.
   - To go from LOADING END→LOADING TOP, press the left button continuously until the desired MODE is reached.
   - In slow position, the L mode operates more slowly than for normal position.
2) M MODE
   - Set L-SW to LOADING TOP before performing EJECT.
   - Set L-SW to LOADING END to perform FF/REW→ RVS or RVS → FF/REW.
   - When the right M MODE switch button is pressed continuously, the dislay lights up from EJECT → RVS in order from left to right.
   - To go from RVS→EJECT, press the left side switch button continuously until the desired MODE is reached.

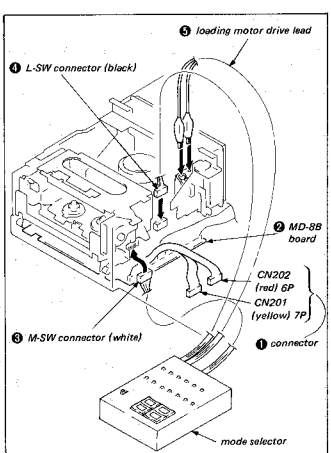
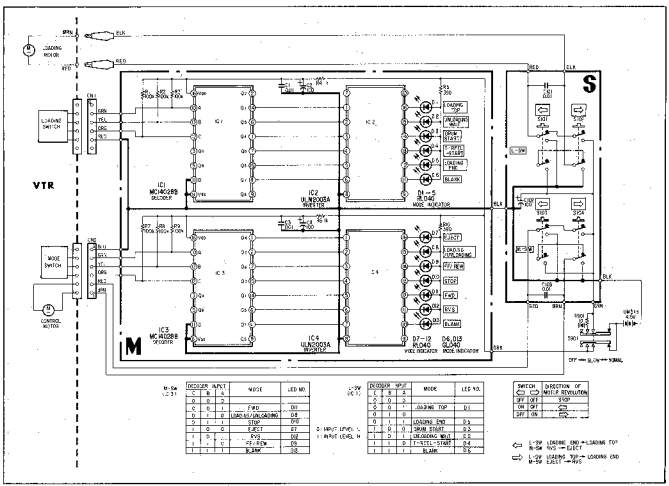


Fig. 1-3.

5. Mode Selector Schematic



DECODER INPUT C	B	A	MODE	LED NO.
0	0	0		
0	0	1	FWD	D11
0	1	0	LOAD-IN/UNLOADING	D6
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	REV	D12
1	1	0	FF/REW	D9
1	1	1	ALARM	D5

H: "0" V
L: 0V

DECODER INPUT C	B	A	MODE	LED NO.
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D3
1	0	0	TAPE START	D2
1	0	1	UNLOADING END	D8
1	1	0	T-END START	D4
1	1	1	ALARM	D5

SWITCH	DIRECTION OF REEL REVOLUTION
OFF OFF	STOP
ON OFF	←
OFF ON	→

6. Mode Selector Parts List

Symbol	Part No.	Part Name		
	capacitors			
C1	1-108-579-00	mylar	0.01μF	50V
C2	1-123-333-00	electrolytic	100μF	24V
C3	1-108-579-00	mylar	0.01μF	50V
C4	1-123-333-00	electrolytic	100μF	24V
C101	1-108-579-00	mylar	0.01μF	50V
C103	1-108-579-00	mylar	0.01μF	50V
	Diodes			
D1	8-179-812-31	diode	RL040	
D2	8-179-812-31	diode	RL040	
D3	8-179-812-31	diode	RL040	
D4	8-179-812-31	diode	RL040	
D5	8-179-812-31	diode	RL040	
D6	8-719-812-33	diode	GL040	
D7	8-179-812-31	diode	RL040	
D8	8-179-812-31	diode	RL040	
D9	8-179-812-31	diode	RL040	
D10	8-179-812-31	diode	RL040	
D11	8-179-812-31	diode	RL040	
D12	8-179-812-31	diode	RL040	
D13	8-719-812-33	diode	GL040	

Symbol	Part No.	Part Name		
	IC			
IC1	8-759-240-28	IC	TC4028BP	
IC2	8-759-120-03	IC	μPA2003A	
IC3	8-759-240-28	IC	TC4028BP	
IC4	8-759-120-03	IC	μPA2003A	
	resistor			
R1	1-247-179-00	carbon	100K	1/4W
R2	1-247-179-00	carbon	100K	1/4W
R3	1-247-179-00	carbon	100K	1/4W
R4	1-247-131-00	carbon	1K	1/4W
R5	1-247-121-00	carbon	390	1/4W
R6	1-247-131-00	carbon	1K	1/4W
R7	1-247-179-00	carbon	100K	1/4W
R8	1-247-179-00	carbon	100K	1/4W
R9	1-247-179-00	carbon	100K	1/4W
R10	1-247-121-00	carbon	390	1/4W
R901	1-214-594-00	metal film	10	1W

2. PERIODIC CHECK AND MAINTENANCE

Please perform the following periodic checks and maintenance in order to obtain optimum set function and performance, and to keep the mechanism and tape in good condition. Also, perform the maintenance below after repair, regardless of the length of time the set has been used by the user.

2-1. Cleaning of Rotary Drum Assembly

1) Press a chamois cloth (Ref. No. J-2) soaked in cleaning fluid (Ref No. J-1) lightly against the rotary drum assembly, and slowly rotate the rotary upper drum assembly counterclockwise by hand to clean.

Note: Do not use the power supply to rotate the motor, and do not rotate the drum clockwise by hand.
Also, there is a danger of damaging the head tip if the chamois cloth is moved vertically relative to the head tip, so please follow the instruction above for cleaning.

2-2. Cleaning of Tape Path

1) Place the cassette compartment assembly in EJECT state, and clean the tape path (No. 1 ~ No. 11 guides, capstan shaft, pinch roller) with a chamois cloth soaked in cleaning fluid. (See Fig. 2-1)

2-3. Cleaning of Drive System

1) Clean the drive system (timing belt, surface of reel tables) with a chamois cloth soaked in cleaning fluid.

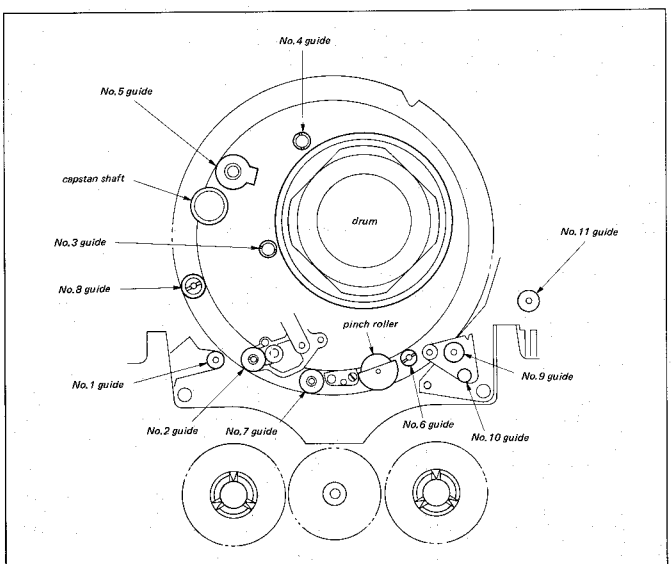


Fig. 2-1.

2-4. Periodic Check

Perform following according to number of hours of use.

	Location	Hours of Use (H)										Notes
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Path	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Drive System	L motor belt	○	○	○	○	○	○	○	★	○	○	3-686-546-01 Replace here, or every two years.
	Timing belt	○	○	○	○	○	○	○	○	○	○	3-686-646-01
	Plunger solenoid	—	-	—	○	—	—	—	○	—	—	1-454-377-11
	Capstan shaft bearing	—	◎	—	◎	-	◎	—	◎	—	◎	Be careful not to get oil on the tape path surface.
	Loading motor	—	☆	—	☆	—	☆	-	☆	—	☆	8-835-121-01
	Control motor	—	☆	—	☆	-	☆	—	☆	—	☆	8-835-110-01
Performance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	-	☆	—	☆	—	☆	
	Brake system	-	☆	—	☆	—	☆	-	☆	—	☆	
	FWD, RVS torque mensurement	—	☆	-	☆	—	☆	—	☆	-	☆	

Note: When performing an overhaul, refer to the items above when replacing parts.

Note: Sony Oil

- Be sure to use Sony Oil. (There is a danger of trouble occurring if a different viscosity is used.)
  Sony Oil: Parts No. 7-611-088-61 (Mitsubishi Diamond Oil #400)
- Be sure to use clean oil when lubricating the shaft bearing, because there is a danger of wear and burning if dirty oil is used.
- One drop of oil means the amount which sticks to a 2 mm diameter rod, as shown in Fig. 2-2.

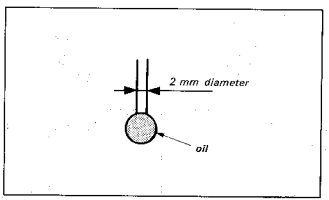
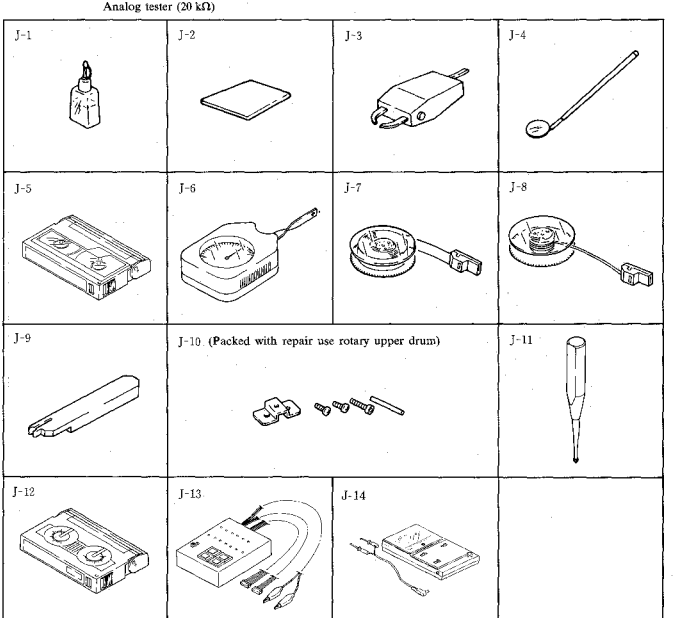


Fig. 2-2.

2-5. Service Jig Table

Ref. No.	Name	Part No.	Jig	Use, Notes
J-1	Cleaning fluid	Y-2031-001-1	——	
J-2	Chamois cloth	2-034-697-00	——	
J-3	Head degausser	Commercially sold	——	
J-4	Small adjustment mirror, spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape (WR5-3CSP)	8-967-995-27		Tape path
J-6	Dial tension gauge	J-6080-827-A		torque measurement
J-7	Tension measurement reel	J-6080-831-A		with ϕ30 tape
J-8	Tension measurement reel	J-6080-832-A		with ϕ16 string
J-9	No. 10 gear phase jig	J-6080-823-A	GD-2047	
J-10	Rotary drum jig	(packed with the repair rotary upper drum)		
J-11	No. 6 guide lock screwdriver	J-6080-826-A		
J-12	FWD, RVS winding torque cassette	J-6080-824-A	GD-2089	
J-13	Mode selector	J-6080-825-A		for all models
J-14	Video head checker	7-732-080-01	SL-5151	

Other equipment: Oscilloscope
Analog tester (20 kΩ)



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note: Use the mode selector (Ref No. J-13) for this mechanical check, adjustment and replacement.
The mode inside the □ is the mode set by pressing the mode selector button.

3-1. S Reel Table Assembly

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-3.
2) Set to [FF/REW] mode.
3) Remove screw ❶ and reel table stopper ❷.
4) Remove the REV brake assembly ❸.
5) Remove the S reel table assembly ❹. (Fig. 3-1)

Note: Be sure to hold the upper reel hook when removing. (See Fig. 3-1)

2. Mounting

1) Place a half drop of oil on the shaft ❺ upper surfance.
2) Move the S main brake assembly ❻ in the direction of arrow Ⓐ.
3) Mount the S reel table assembly ❹, being careful not to hit the tension regulator band assembly ❼.
4) Mount the REV brake assembly ❸.
5) Mount the reel table stopper ❷ and tighten with screw ❶. (See Fig. 3-1)
6) Set to [LOADING/UNLOADING] mode.
7) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-3. in reverse.

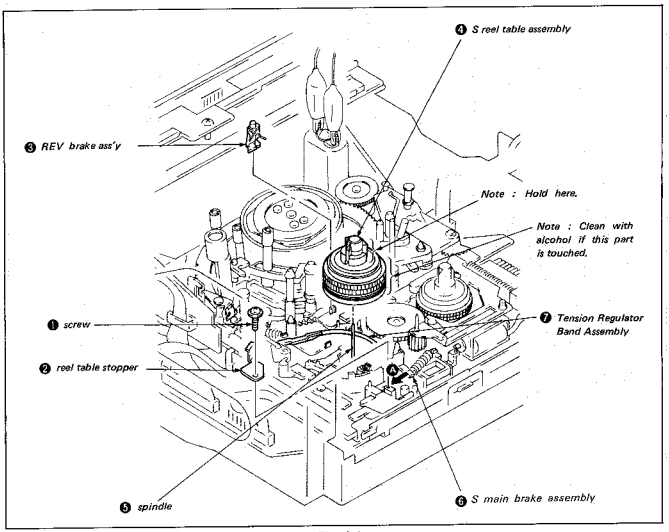

❹ S reel table assembly
❸ REV brake ass'y
Note : Hold here.
Note : Clean with alcohol if this part is touched.
❶ screw
❼ Tension Regulator Band Assembly
❷ reel table stopper
Ⓐ
❺ spindle
❻ S main brake assembly

Fig. 3-1.

3-2. T Reel Table Assembly

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-3.
2) Set to [UNLOADING WAIT] mode.
3) Place the spring ❷ on the T.S brake assembly ❶ on the hook on the lock slider assembly.
4) Remove the stopper washer ❸ and the T soft brake assembly ❶.
5) Set to [EJECT] mode.
6) Move drive gear (B) assembly ❹ in the direction of arrow Ⓐ.
7) Remove T reel table assembly ❺. (See Fig. 3-2)

Note: Be sure to hold the upper reel hook when removing. (See Fig. 3-2).

2. Mounting

1) Place a half drop of oil on the shaft ❻ upper surface.
2) Move the drive gear B assembly ❹ in the direction of arrow Ⓐ. (Check [EJECT] mode.)
3) Mount the T reel table assembly ❺.
4) Mount the T soft brake assembly ❶ and the stopper washer ❸.
5) Place the spring ❷ on the T.S brake assembly ❶ hook. (See Fig. 3-2)
6) Set to [LOADING TOP], [LOADING/UNLOADING] mode.
7) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-3. in reverse.

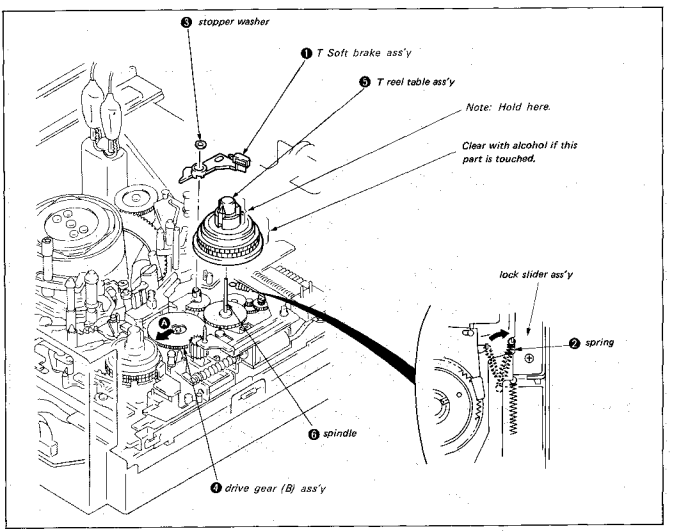


Fig. 3-2.

3-3. Pinch Press Arm Assembly

1. Removal

1) Place the spring ❶ on the pinch press arm assembly ❷.
2) Remove the stopper washer ❸ and the pinch press arm assembly ❷. (See Fig. 3-3)

2. Mounting

1) Place a half drop of oil on shaft ❹.
2) Mount the pinch press arm assembly ❷ and the stopper washer ❸.
3) Place the spring ❶ on the tension regulator spring assembly ❺. (See Fig. 3-3)

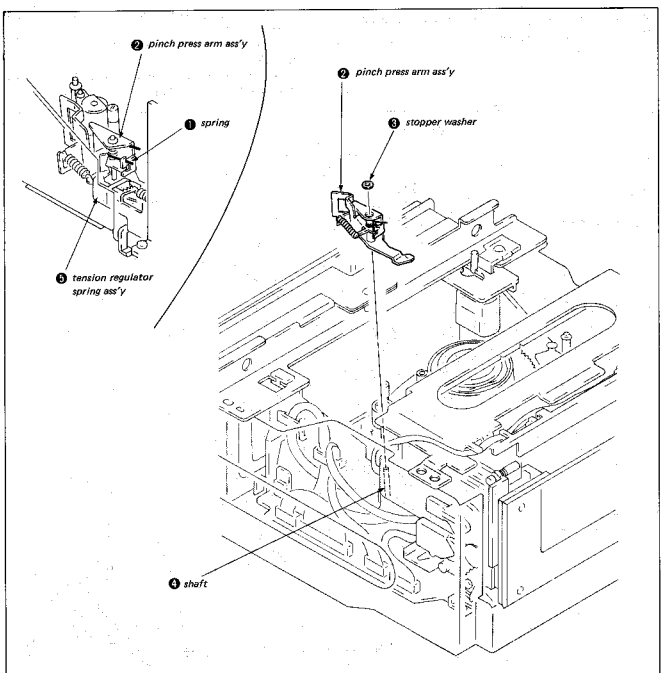


Fig. 3-3.

3-4. Tension Regulator Arm Assembly

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-3.
2) Change the spring position as described in 3.3, 1. Removal, 1). (See Fig. 3-3)
3) Remove spring ❶. (Note its position.)
4) Remove screw ❷ and the tension regulator spring assembly ❸.
5) Set to FF/REW mode.
6) Remove the tension regulator band assembly hook ❹.
7) Remove the tension regulator arm assembly ❺. (See Fig. 3-4)

2. Mounting

1) Place a half drop of oil on the shaft ❻.
2) Mount the tension regulator arm assembly ❺, placing the tension regulator load arm assembly pin ❼ in the tension regulator arm assembly ❺ cam groove (on the back).
3) Mount the tension regulator band assembly hook ❹. (Do not touch the band or change its shape.)
4) Set to LOADING/UNLOADING mode.
5) Mount the tension regulator spring assembly ❸ and tighten with screw ❷.
6) Replace spring ❶ in its original position and lock the screws. (See Fig. 3-4)
7) Position the spring according to item 3.3, 2. Mounting, 3). (See Fig. 3-3)
8) Mount the cassette compartment assembly by following the procedure in item Section 2, 2-3. in reverse.

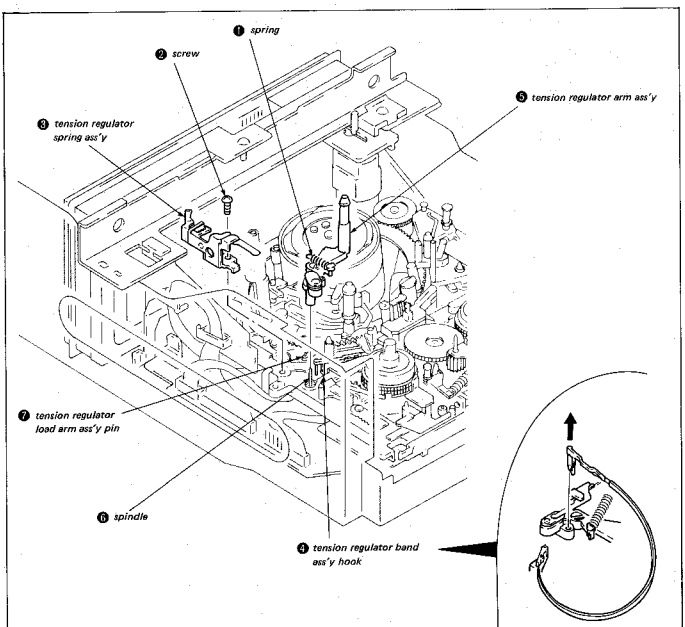

❶ spring
❷ screw
❸ tension regulator spring ass'y
❺ tension regulator arm ass'y
❼ tension regulator load arm ass'y pin
❻ spindle
❹ tension regulator band ass'y hook

Fig. 3-4.

3-5. Tension Regulator Band Assembly

1. Removal

1) Remove the S reel table assembly according to item 3-1, 1. Removal. (See Fig. 3-1)
2) Remove the band arm hook ❶.
3) Remove hook ❷ and the tension regulator band assembly ❸. (See Fig. 3-5)

2. Mounting

1) Mount the tension regulator band assembly ❸. (Do not touch the band or change its shape.)
2) Fit on the band arm hook ❶. (Fig. 3-5)
3) Mount the S reel table assembly according to 3-1, 2. Mounting. (See Fig. 3-1)
4) Perform 3-21. FWD Back Tension Adjustment.

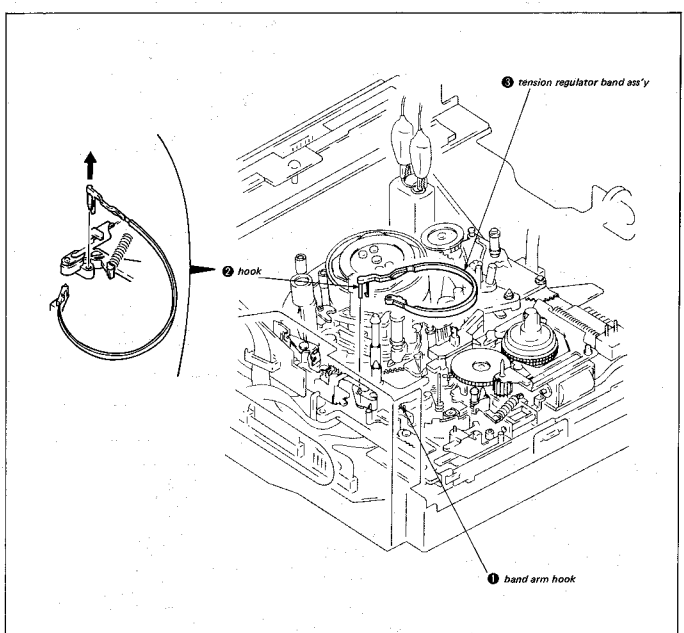


Fig. 3-5.

3-6. Loading Motor Assembly

1. Removal

1) Open the MD-8B board ❶ according to item Section 2, 2-8.
2) Remove connector ❷ from MD-8B board ❶.
3) Remove L motor belt ❸.
4) Remove cap cover ❹.
5) Remove the two screws ❺ and the loading motor assembly ❻. (See Fig. 3-6)

2. Mounting

1) Remove the loading motor shield plate from the loading motor which had a cassette inserted.
2) Wind the loading motor shield plate removed in step 1) around the loading motor assembly ❻. (Refer to mounting diagram)
3) Mount the loading motor assembly ❻ and tighten the two screws ❺.
4) Mount the cap cover ❹.
5) Mount L motor belt ❸. (See Fig. 3-6)
6) Connect connector ❷ to MD-8B board ❶. (See Fig. 3-6)
7) Mount MD-8B board ❶ by following the procedure in item Seciton2, 2-8. in reverse.

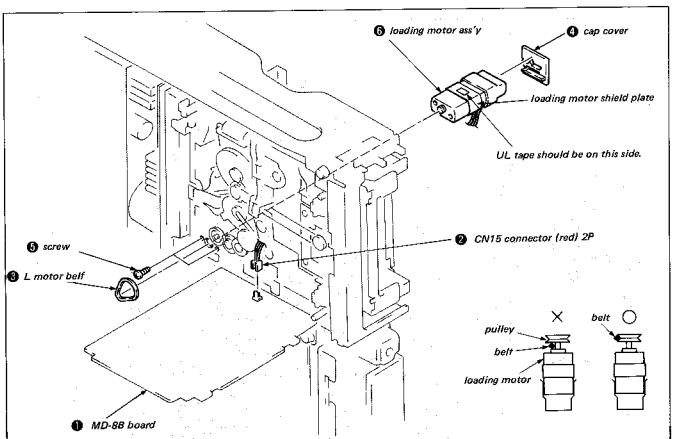


Fig. 3-6.

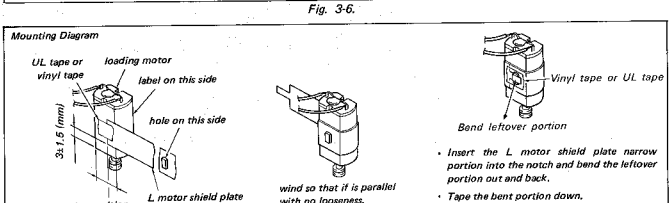

Mounting Diagram
UL tape or vinyl tape
loading motor
label on this side
hole on this side
3±1.5 (mm)
L motor shield plate
center position
wind so that it is parallel with no looseness.
Vinyl tape or UL tape
Bend leftover portion
• Insert the L motor shield plate narrow portion into the notch and bend the leftover portion out and back.
• Tape the bent portion down.

Fig. 3-7.

3-7. Loading Ring Assembly

1. Removal

1) Remove the mechanism as described in item Section 2, 2-12.
2) Operate the mode selector, and move the guide base assembly ❶ until just before lock, and the entrance guide assembly ❷ until just before lock where the ring stopper ❸ screw is visible. (Do not move loading ring assembly ⓫ .
3) Remove the stopper washer ❹ and remove No. 10 gear assembly ❺ .
4) Remove screw ❻ and the roller stopper ❼ and ring spacer ❽ .
5) Remove the two screws ❾ and the ring stopper ❸ and ring spacer ❿ .
6) Remove the loading ring assembly as shown by arrow Ⓐ . (Refer to Fig. 3-8)

Note: Be careful that the loading ring assembly ⓫ does not touch the drum when it is removed.

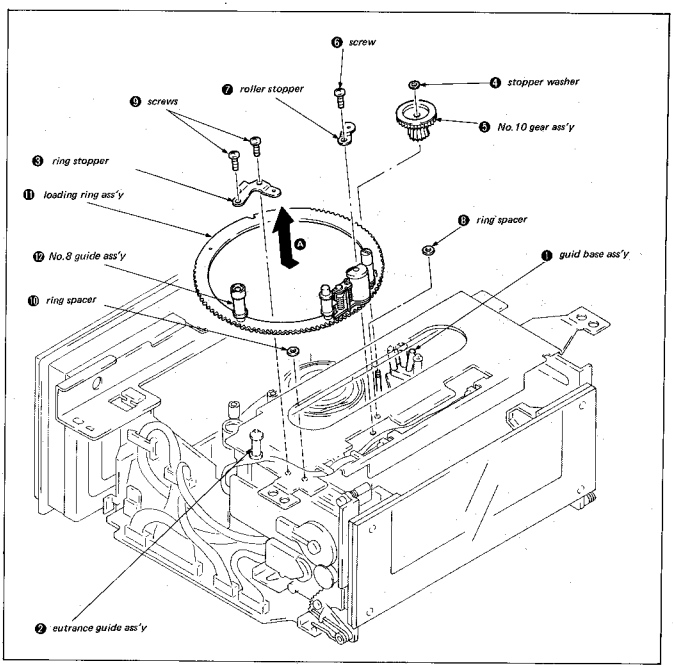


Fig. 3-8.

2. Mounting

1) Mount the loading ring assembly ⓫ so that it is in unthreaded state (pinch roller arm assembly is on the front panel side). (Check that is in the state in step 2) under Removal.)
2) Mount the ring spacer ⓾ and ring stopper ❸ and tighten with the two screws ❾. (No. 8 guide assembly ⓬ sould be closer to the front panel than the ring stopper ❸.)
3) Mount the ring spacer ❽ and roller stopper ❼ and tighten with screw ❻. (Check that the loading ring assembly matches the three ring spacers.)
4) Place a half drop of oil on the shaft ⓭. (See Fig. 3-8)
5) Check that the protrusions on the drive changer assembly are in the indentations of the L-SW assembly and insert the No. 10 gear phase jig (Ref No. J-9). (See Fig. 3-9)
6) Mount No. 10 gear assembly ❺ and stopper washer ❹ while pushing the No. 8 guide assembly ⓬ against the ring stopper ❸.
7) Pull out the No. 10 gear phase jig.
8) Set to LOADING TOP mode. (See Fig. 3-8)
9) Mount the mechanism by following the procedure in Section 2. 2-12. in reverse.

Note: Be sure to perform 4. Tape Path Adjustment after mounting.

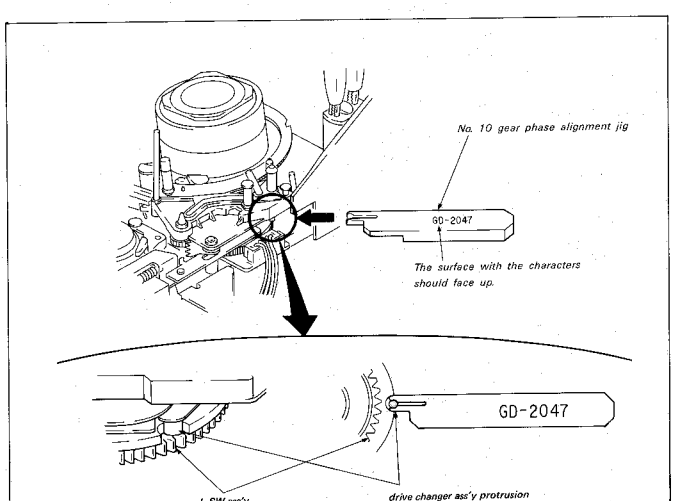


Fig. 3-9.

3-8. Pinch Roller Assembly

1. Removal

1) Remove the loading ring assembly as described in 3-7., 1. Removal. (See Fig. 3-8)
2) Remove stopper washer ❶. (See Fig. 3-10)
3) Change the position of the spring ❸ on No. 7 guide assembly ❷. (See Fig. 3-11)
4) Rotate pinch roller arm assembly ❹ in the direction of arrow Ⓐ. (See Fig. 3-12)
5) Remove pinch roller arm assembly ❹ in the direction of arrow Ⓑ. (See Fig. 3-13)
6) Remove spring ❸. (See Fig. 3-14)

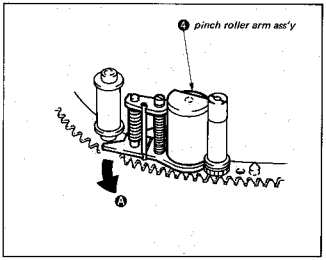


Fig. 3-12.

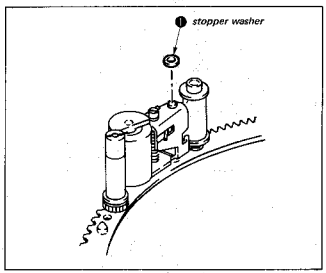


Fig. 3-10.

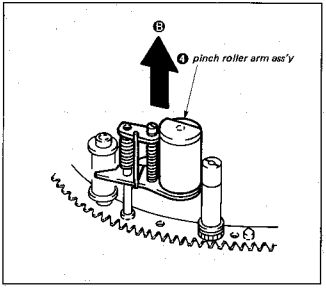


Fig. 3-13.

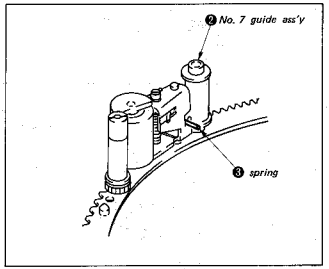


Fig. 3-11.

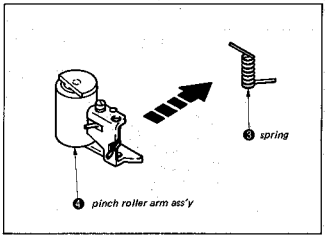


Fig. 3-14.

2. Mounting

1) Position spring ❸ (See Fig. 3-15)
2) Insert the end of a paper clip ❺ or other thin rod inside the pinch roller arm assembly hole ❻. (See Fig. 3-16, 3-17)
3) Push the end of the clip ❺ through to contact the loading ring assembly shaft ❼ and mount the pinch roller arm assembly ❹. (See Fig. 3-18, 3-19)
4) Place the spring on No. 7 guide assembly ❷. At this time, check that the spring is hooked on section Ⓒ. (See Fig. 3-20)
5) Mount the stopper washer ❶. (See Fig. 3-21)
6) Mount the loading ring assembly according to 3-7., 2. Mounting. (See Fig. 3-8)

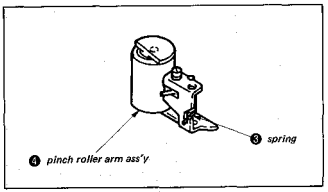


Fig. 3-15.

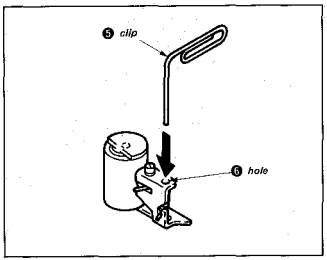


Fig. 3-16.

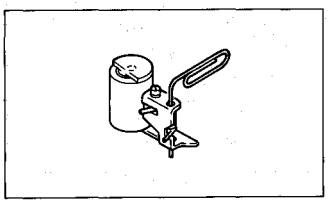


Fig. 3-17.

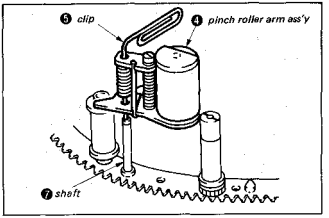


Fig. 3-18.

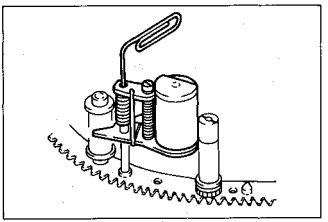


Fig. 3-19.

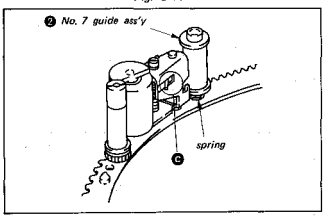


Fig. 3-20.

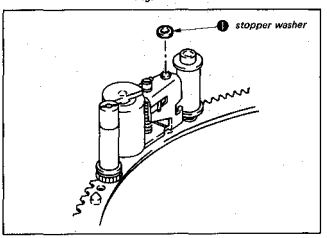


Fig. 3-21.

3-9. Slant Guide Assembly

1. Removal

1) Remove the cassette compartment assembly according to item Section 2, 2-3.
2) Remove the loading ring assembly according to 3-7., 1. Removal. (See Fig. 3-8)
3) Remove screw ❶ and E ring ❷.
4) Remove the slant guide assembly ❸. (Refer to Fig. 3-22)

2. Mounting

1) Operate the mode selector, and line up the right edge of the L slider assembly and the right edge of the lock slider assembly. (See Fig. 3-23)
2) Set the slant guide assembly guide base assembly in unthreaded state (guide base assembly is on front panel side) and mount. (See Fig. 3-24)

Note: At this time, confirm the engagement position of the slant guide drive gear and L slider assembly gear. (Fig. 3-28)

3) Mount the E ring ❷ and tighten screw ❶. (Fig. 3-22)
4) Put in the state in 3-7., 1. Removal, 1).
5) Mount the loading ring assembly according to 3-7., 2. Mounting (Fig. 3-8)
6) Mount the cassette compartment assembly by following the procedure in Section 2, 2-3. in reverse.

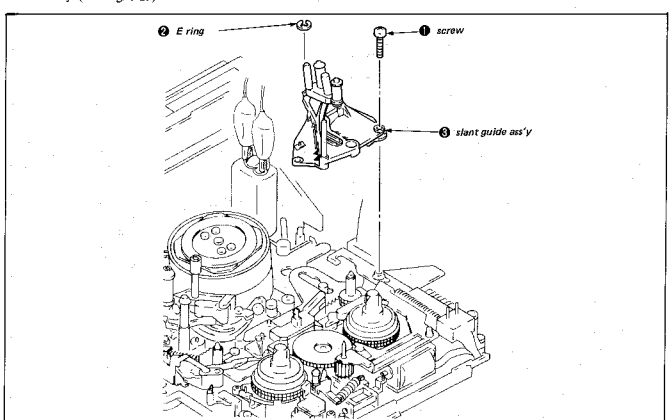


Fig. 3-22.

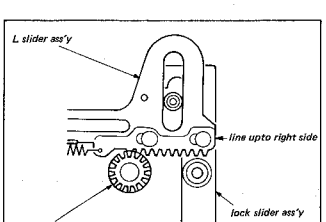


Fig. 3-23.

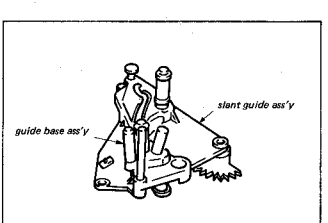


Fig. 3-24.

3-10. Entrance Guide Assembly (No. 2 Guide Assembly)

1. Removal

1) Turn the rotary upper drum counterclockwise and separate the head portion from the entrance guide assembly ❶.
2) Remove the two screws ❷.
3) Remove No. 3 guide guide nut ❸, and remove guide flange ❹, guide ❺ and coil spring ❻.
4) Remove the entrance guide assembly ❶. (Fig. 3-25)

2. Mounting

1) Engage the entrance guide assembly and L slider assembly so that the part without teeth Ⓐ on the bottom of the entrance guide assembly and the part without teeth Ⓑ on the L slider assembly match.
2) Mount the coil spring ❻, guide ❺ and guide flange ❹ in that order, then temporarily tighten the guide nut ❸.
3) Tighten the two screws ❷. (Fig. 3-25)

Note: Be sure to perform 4. Tape Path Adjustment after mounting.

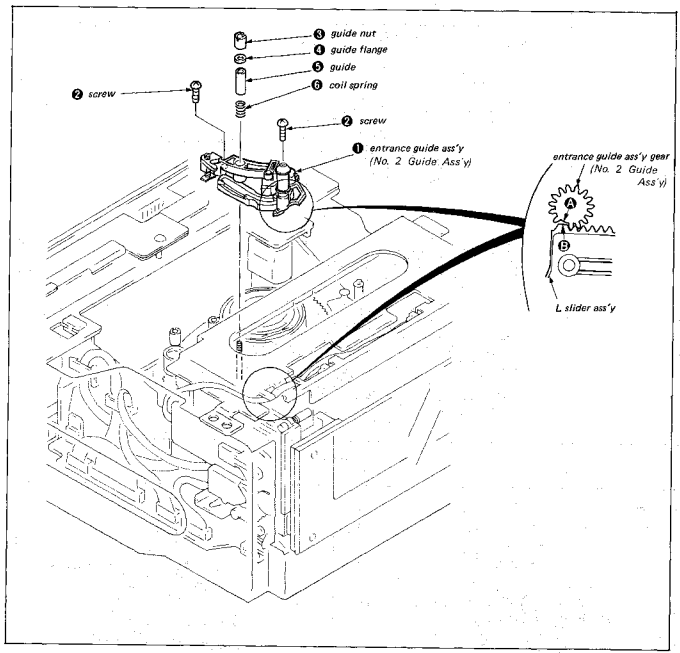


Fig. 3-25.

3-11. L Slider Assembly

1. Removal

1) Remove the slant guide assembly according to 3-9., 1. Removal.
2) Remove the entrance guide assembly according to 3-10., 1. Removal.
3) Set to DRUM START mode.
4) Remove slant guide drive gear ❶.
5) Remove the tension regulator load arm assembly ❷ pin from the cam groove of the tension regulator arm assembly. (See Figure 3-4. Tension Regulator Arm Assembly)
6) Remove the two stopper washers ❸.
7) Remove the L slider assembly ❺ while pushing the RL arm assembly protrusion ❹ in the direction of arrow Ⓐ.
8) Remove the stopper washer ❻ and the tension regulator load arm assembly ❷. (Fig. 3-26)

2. Mounting

1) Lubricate the portions indicated in Fig. 3-27.
2) Mount the tension regulator load arm assembly ❷ and the stopper washer ❻. (Fig. 3-26)
3) Mount the L slider assembly 5 while pushing the RL arm assembly protrusion ❹ in the direction of arrow Ⓐ.
4) Put the tension regulator load arm assembly ❷ pin into the M slider groove. (See Fig. 3-15, M slider)
5) Mount the two stopper washers ❸.
6) Refer to 3-4., 2. Mounting, 2), and place the tension regulator load arm assembly ❷ pin in the tension regulator arm assembly cam groove.
7) Operate the mode selector, and match up the right edge of the L slider assembly and the right edge of the lock slider assembly. (Refer to 3-9, 2. Mounting, 1))
8) Engage the slant guide drive gear so that the notch is 1 tooth away from the L slider assembly left side tooth. (Fig. 3-28)
9) Mount the entrance guide assembly according to 3-10., 2. Mounting.
10) Mount the slant guide assembly according to 3-9., 2. Mounting.

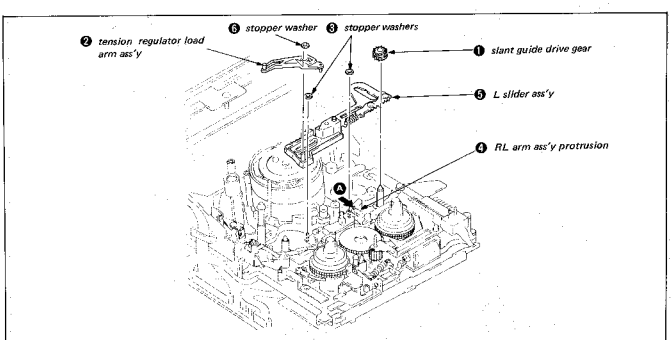


Fig. 3-26.

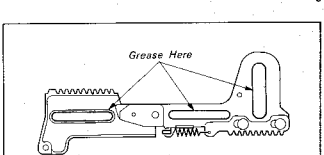


Fig. 3-27.

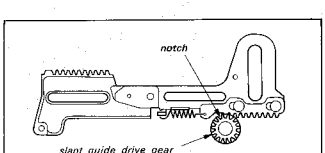


Fig. 3-28.

3-12. L-SW Assembly

1. Removal

1) Remove the L slider assembly according to 3-11., 1. Removal.
2) Remove lock slider holder ❶.
3) Remove screw ❷ and lock slider A ❸.
4) Remove stopper washer ❹ and coil spring ❺.
5) Remove drive changer assembly ❻.
6) Remove connector ❼.
7) Remove the two screws ❽ and the L-SW assembly ❾.
(Refer to Fig. 3-29)

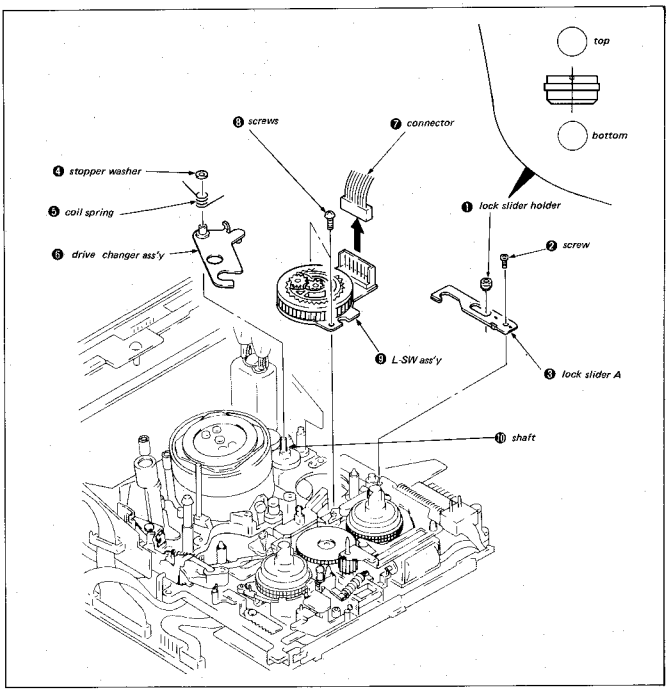


Fig. 3-29.

2. Mounting

1) Place a half drop of oil on the L-SW assembly ❾ shaft (planetary gear).
2) Mount L-SW assembly ❾ and tighten with the two screws ❽.
3) Connect connector ❼.
4) Operate the mode selector and check that the L-SW assembly ❾ rotates.
5) Place a half drop of oil on shaft ⓫.
6) Grease the drive change assembly ❻ as shown in Fig. 3-30.
7) Mount the drive changer assembly ❻. (See Fig. 3-29)
8) Mount the coil spring ❺ and the stopper washer ❹.
9) Operate the mode selector and check that the L-SW assembly ❾ rotates.
10) Mount lock slider A ❸ and tighten screw ❷.
11) Mount lock slider holder ❶. (Fig. 3-29)
12) Operate the mode selector and set to the position in Fig. 3-31.
13) Mount the L slider assembly according to 3-11., 2, Mounting.

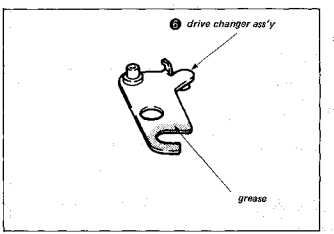


Fig. 3-30.

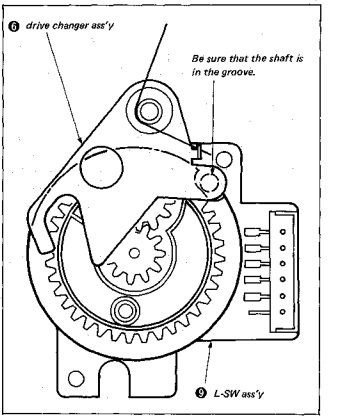


Fig. 3-31.

3-13. Plunger Solenoid

1. Removal

1) Open the MD-8B board according to Section 2, 2-8. and remove connector CN13 (yellow) 3P.
2) Remove the cassette compartment assembly according to Section 2, 2-3.
3) Remove spring ❶.
4) Remove the two stopper washers ❷.
5) Remove screw ❸ and the lock slider B assembly ❹.
6) Remove the two screws ❺ and the plunger solenoid ❻. (At this time, be careful not to scratch the T reel assembly with the screwdriver, and do not touch it.) (Fig. 3-32)

2. Mounting

1) Insert the plunger solenoid pin ❼ into the P arm hole ❽ and mount with the two screws ❺. (Again, be careful not to scratch or touch the T reel assembly.)
2) Mount lock slider B assembly ❹ and tighten screw ❸.
3) Mount the two stopper washers ❷.
4) Hook on the spring ❶. (Fig. 3-32)
5) Mount the cassette compartment assembly by following the procedure in 1-8. in reverse.
6) Connect the CN13 connector (yellow) to the MD-8B board.
7) Mount the MD-8B board by following the procedure in Section 2, 2-8. in reverse.

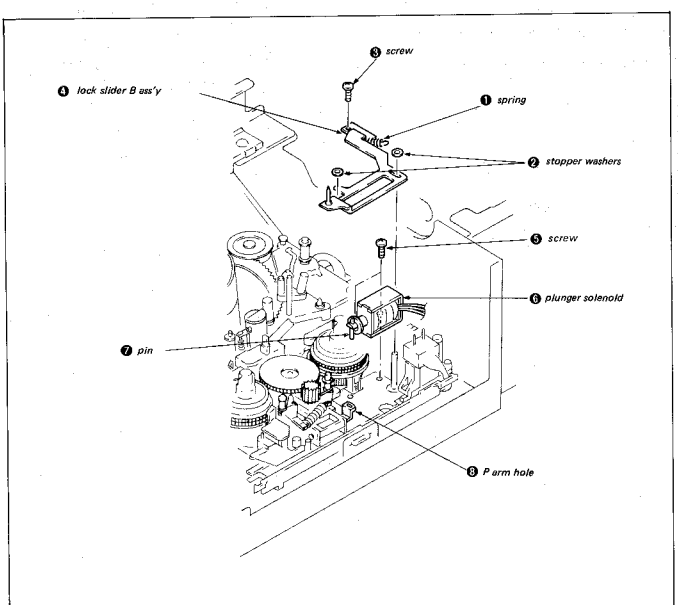


Fig. 3-32.

3-14. M-SW Assembly

1. Removal

1) Open the MD-8B board according to Section 2, 2-8., and remove CN25 connector (yellow) 2P and lengthen the wiring which comes outside.
2) Remove the T reel assembly according to 3-2. (Fig. 3-2)
3) Remove stopper washer ❶ and the drive gear B assembly ❷.
4) Remove the LD-1 board. (See Fig. 3-33)
5) Remove lock slider ❽ assembly according to 3-13., 1. Removal, 3), 4) and 5).
6) Remove spring ❹ and B release arm assembly ❺.
7) Check EJECT mode.
8) Remove stopper washer ❻ and the mode output gear ❼.
9) Remove screw ❽ and the push switch ❾.
10) Remove connector ❿.
11) Remove the three screws ⓫, the control motor cover assembly ⓬ and the M-SW assembly ⓭.
12) Remove solder Ⓐ and remove the DC motor ⓮. (Refer to Fig. 3-34)

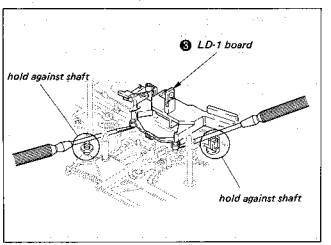


Fig. 3-33.

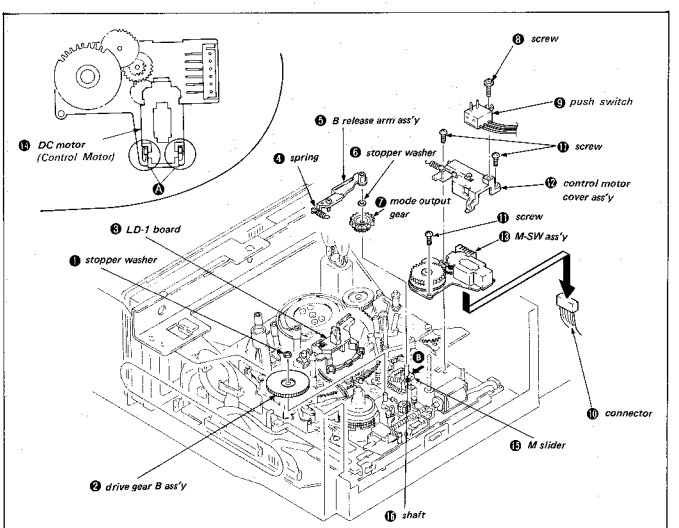


Fig. 3-34.

2. Mounting

1) Solder the DC motor (Control Motor) ⓮ .
2) Mount the M-SW assembly ⓭ and the control motor cover assembly ⓬ , and tighten the three screws ⓫ .
3) Connect connector ⓾ .
4) Mount push switch ❾ and tighten screw ❽ .
5) Check EJECT mode.
6) Check that M slider ⓭ is moved fully in the direction of arrow ❽ .
7) Place a half drop of oil on shaft ⓰ . (Fig. 3-34)
8) Mount the mode output gear ❼ so that the positioning holes are lined up. (Fig. 3-35)
9) Mount stopper washer ❻ .
10) Set to LOADING/UNLOADING mode.
11) Mount B release arm assembly ❺ and spring ❹ .
12) Mount the lock slider B assembly according to 3-13., 2. Mounting, 2), 3) and 4).
13) Mount the LD-1 board ❸ .
14) Mount drive gear B assembly ❷ and stopper washer ❶ . (Fig. 3-34)
15) Mount the T reel assembly according to 3-2., 2. Mounting.
16) Connect the 2P CN25 connector (yellow) to MD-8B board.
17) Mount the MD-8B board by following the procedure in Section 2, 2-8. in reverse.

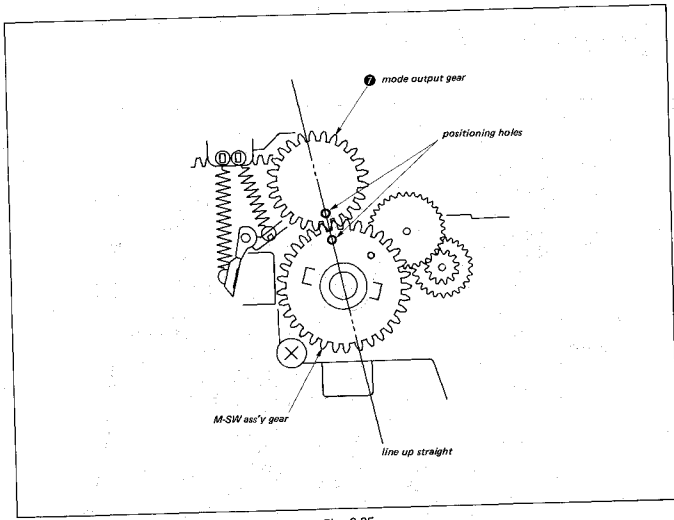


Fig. 3-35.

3-15. M Slider

1. Removal

1) Open the MD-8B board according to Section 2, 2-8., and remove timing belt ❶.
2) Remove the pinch press arm assembly according to 3-3., 1. Removal. (Fig. 3-3)
3) Remove the tension regulator arm assembly according to 3-4., 1. Removal. (Fig. 3-4)
4) Remove the tension regulator band assembly according to 3-5., 1. Removal. (Fig. 3-5)
5) Remove the loading ring assembly according to 3-7., 1. Removal (Fig. 3-8)
6) Perform 3-14., steps 1)-6).
7) Remove the tension regulator load arm assembly according to 3-11., 1. Removal, 8). (Fig. 3-26)
8) Remove spring ❷.
9) Remove the two stopper washers ❸ and remove the S main brake assembly ❹ and T brake assembly ❺.
10) Set to LOADING TOP, LOADING/UNLOADING mode.
11) Remove the two screws ❻ and the drive assembly ❼.
12) Perform 3-14., 1. Removal, steps 7) and 8).
13) Remove the two springs ❽.
14) Remove REW brake assembly ❾.
15) Remove stopper washer ❿ and B release slider ⓫.
16) Remove RVS arm ⓬.
17) Remove stopper washer ⓭ and ring lock spring ⓮ and RL arm assembly ⓯.
18) Move the M slider ⓰ to the right (leave about 5 mm at the left.)
19) Remove the E ring ⓱ and the pinch press lever assembly ⓲.
20) Remove spring ⓳ and the hard brake S ⓴.
21) Remove stopper washer ㉑, push the mode arm ㉒ in the direction of arrow Ⓐ, and lift up the left side of the M slider ㉓ to remove. (See Fig. 3-36)

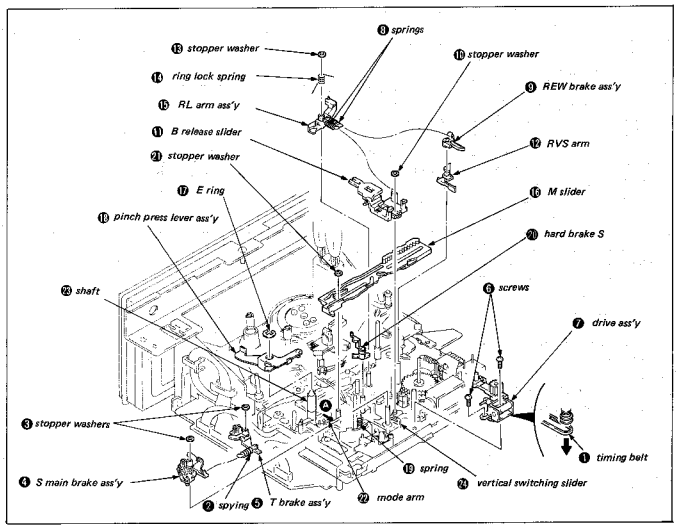


Fig. 3-36.

State of Wear of Video Heads Check

As the accuracy of the check depends on the state of the heads and precision of the checker, the results should be taken only as an indication of the state of wear.

[Adjustment of video head checker]

1) Mechanical zero
   Verify that the pointer of the video head checker is at the mechanical zero position. If it is not at this position, adjust the mechanical zero control.
2) Battery voltage check
   Set the MODE switch to "BATT" and set the POWER switch to "ON". The deflection of the pointer should be within the range marked "BATT". If not, replace the battery (use a 6F22 battery) as follows.
3) Calibration check
   Set the POWER switch to "ON" and the MODE switch to "CAL", then adjust the CAL control so that the pointer is on the CAL mark.

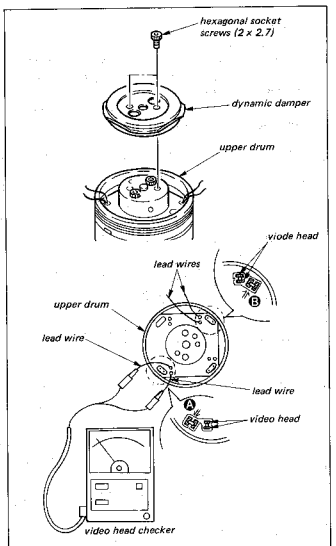
   Note 1: Be sure to carry out this adjustment whenever the RANGE switch is changed.

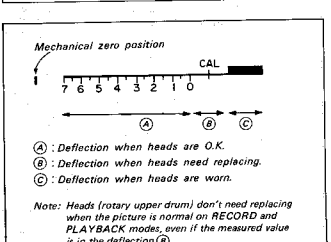
   Note 2: Be sure to check CAL before measuring the head and proceed the measurement after adjusting CAL, if CAL is not properly set.

[Method of measurement]

1) Remove the two hexagonal socket screws (2 x 2.7) and dismount the dynamic damper.
2) Unsolder the portions indicated by the arrow Ⓐ and Ⓑ.
3) Solder the lead wires on the 2 video head.
4) Attach the measuring clips to the head leads.
   Be sure to separate the leads by at least 1.5cm.
5) Set RANGE switch to "A" and MODE switch to "MEAS". The pointer will deflect to indicate the state of wear of the heads.

   Note: The deflection for the 2 video heads may be different so be sure to measure both.





Ⓐ : *Deflection when heads are O.K.*
Ⓑ : *Deflection when heads need replacing.*
Ⓒ : *Deflection when heads are worn.*

Note: Heads (rotary upper drum) don't need replacing when the picture is normal on RECORD and PLAYBACK modes, even if the measured value is in the deflection Ⓑ.

MEASURED VALUE

3-17. Replacement of Rotary Upper Drum

1. Removal

- There is a colour mark on the rotary upper drum, as shown in Fig. 3-42, so refer to the table below when replacing.
- If recording is possible, first record before removing.

Colour Mark Combinations when Replacing

New rotary upper drum		Removed rotary upper drum
Part No.	Colour Mark	Colour Mark
A-7049-021-A	blue or red	blue or red
A-7049-022-A	black or green	black or green

Note: Do not combine colour marks other than in the ways listed above.

1) Remove the two hexagonal bolt screws ❶ and the dynamic damper ❷. (Fig. 3-42)
2) Remove all 8 solders in section Ⓐ and confirm that the board and the pins on the bottom can move freely, using tweezers or the like. (Fig. 3-42)
3) Remove the two hexagonal bolt screws ❸. (Fig. 3-42)
4) Mount the supplied jig Ⓑ (Ref No. J-10) on the dynamic damper mounting hole with the two supplied screws ❹, and mount the supplied hexagonal bolt screw ❺ on supplied jig Ⓑ, then remove the rotary upper drum ❻. (Fig. 3-43)

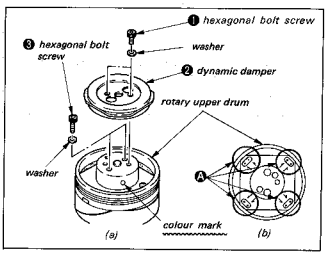


Fig. 3-42.

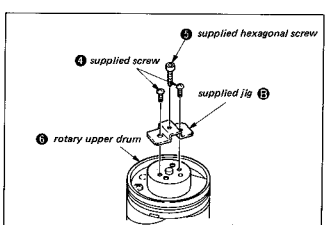


Fig. 3-43.

2. Mounting

1) Clean the flange surface and the surface of the rotary upper drum which contacts it, making sure that there is no dirt or scratches.
2) Use jig Ⓒ (Ref No. J-10) to line up rotary upper drum ❻ and the positioning hole Ⓓ, and lightly insert the rotary upper drum. At this time make sure that the pins come above the rotary upper drum board. Fix with tweezers if the pins catch. (Fig. 3-44)
3) Remove jig Ⓒ and push the rotary upper drum in by hand, gently. (Fig. 3-45) When it is not inserted all the way, tighten the two hexagonal bolt screws ❸ alternately to temporarily fix it.
4) Insert jig Ⓒ into the positioning hole Ⓓ again and make sure it goes in smoothly. If not, loosen the two screws ❸ and insert a clock screwdriver into the hole to fix.
5) Tighten the two screws ❸.
   Note: Be careful not to tighten too much.
6) Solder the pins in section Ⓐ. (Fig. 3-42)
   Note: Be careful that the solder does not go under the board.
7) Mount the dynamic damper ❷ with the two screws ❶. (Fgi. 3-42)
   Note:
   - Be careful not to tighten too much.
   - Be careful not to mix up the hexagonal bolt screw ❶ (2×2.7) and ❸ (2×5)

Note: After mounting, be sure to perform 4. Tape Path Adjustment.

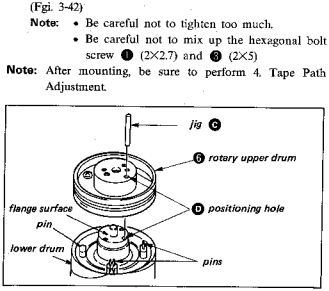


Fig. 3-44.

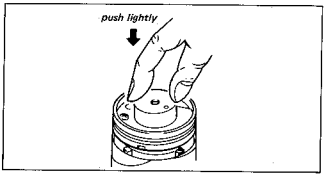


Fig. 3-45.

Notes on Drum Assembly and Rotary Upper Drum Mounting

1. When mounting the drum assembly with a magnetized screwdriver, mount with the head tip in the position shown below to prevent it from being affected by the screwdriver.
2. Be sure to perform tape path adjustment after mounting.

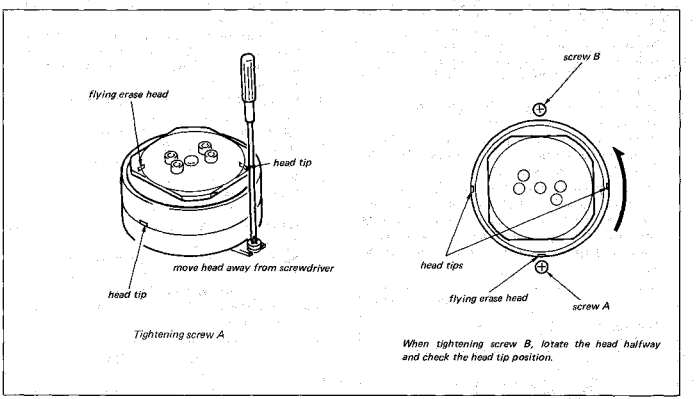


Fig. 3-46.

3-18. Replacement of Drum Assembly

1. Removal

1) Open the MD-8B board according to Section 2, 2-8.
2) Remove screw ❶ and the shaft ground pin ❷. (Fig. 3-47)
3) Remove the four connectors ❸.
4) Remove the two screws ❹.
5) Remove the drum assembly ❺. (Fig. 3-48)

Note: At this time, be careful that the drum assembly does not hit No. 3 guide, etc.

2. Mounting

1) Mount drum assembly ❺ and tighten the two screws ❹.
2) Connect the four connectors ❸. (Fig. 3-48)
3) Mount shaft ground pin ❷ and tighten screw ❶. (Fig. 3-47)
4) Mount the MD-8B board by following the procedure in Section 2, 2-8. in reverse.

Note: Be sure to perform 4. Tape Path Adjustment after mounting.

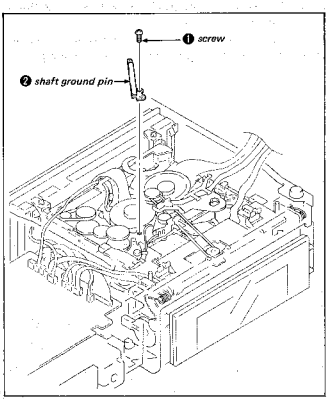


Fig. 3-47.

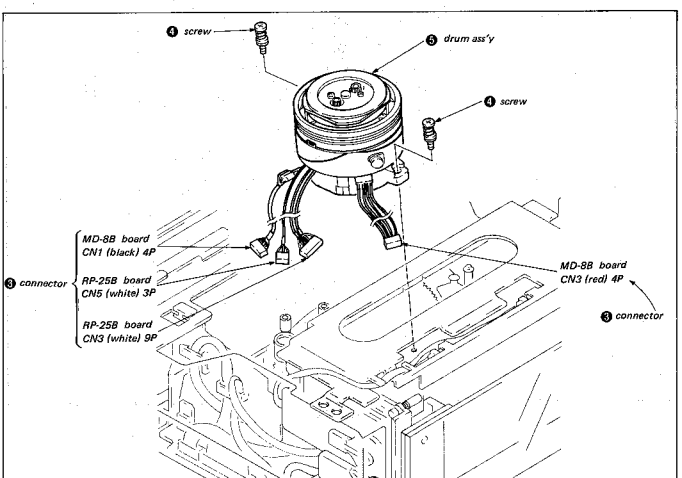


Fig. 3-48.

3-19. Adjustment after Replacement of No. 3 Guide and No. 4 Guide

For replacement of both No. 3 and No. 4 guides, line up the tape along the upper flange after replacing. (See Fig. 4-21)

3-20. No. 5 Guide Assembly

1. Removal

1) Remove the three screws ❶ and No. 5 guide assembly.
2) Remove guide nut ❷, spring ❸ and No. 5 guide roller assembly ❹. (Fig. 3-49)

2. Mounting

1) Insert spring ❸ into No. 5 guide roller assembly ❹, engage the bottom section and tighten guide nut ❷.
2) Mount No. 5 guide assembly and tighten the three screws ❶. (Fig. 3-49)

Note: Be sure to perform 4. Tape Path Adjustment after mounting.

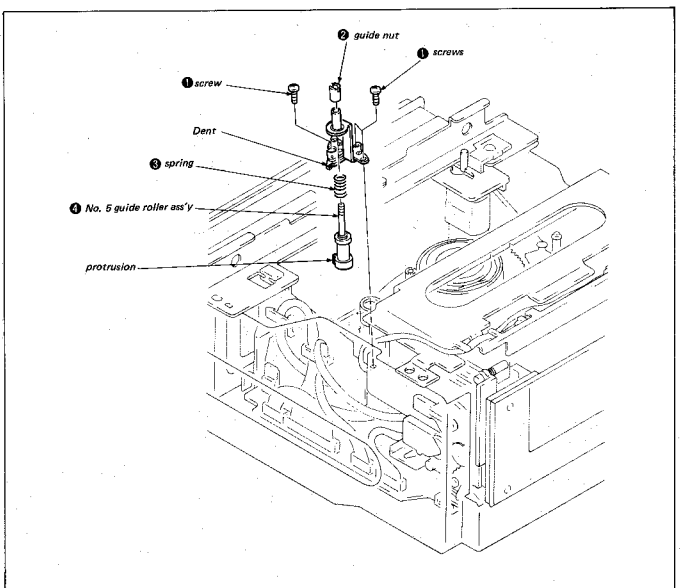


Fig. 3-49.

3-21. FWD Back Tension Adjustment

1) Remove the cassette compartment assembly according to Section 2, 2-3.
2) Remove the mechanism according to Section 2, 2-12.
3) Set to LOADING END FWD mode.
4) Loosen band adjustment plate ❶ screw ❷ and adjust as shown by arrow Ⓐ so that the tension regulator arm assembly slit ❸ and tension regulator arm assembly pin ❹ are positioned as shown, and tighten screw ❷.
5) Place tension measurement reel (Ref No. J-7) ❻ on the S reel table assembly ❺ and line up with No. 1 guide, No. 2, No. 3 guide and the drum.
6) Pull dial tension gauge (Ref No. J-6) ❼ in the direction of arrow Ⓑ and hook spring ❽ onto the tension regulator spring hook assembly ❽ so that the value is 12.5 ± 1g, as shown. (Fig. 3-50)
   Value too large: arrow Ⓒ direction
   Value too small: arrow Ⓓ direction

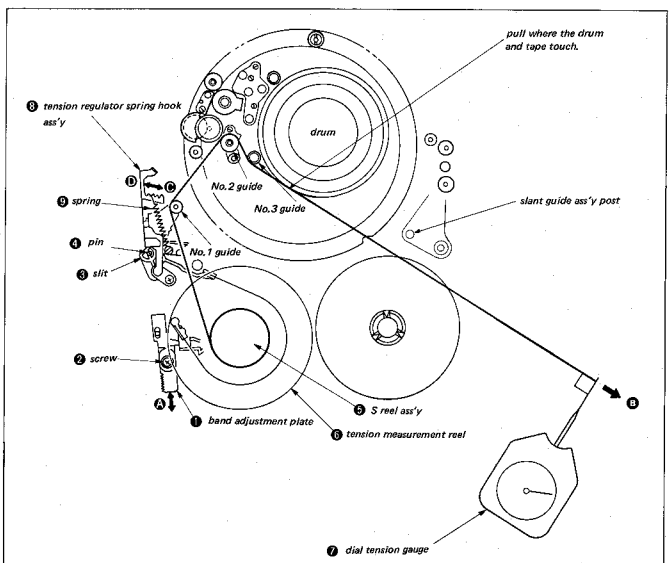


Fig. 3-50.

3-22. Check and Adjustment of Timing Belt Tension

1) Cover the tape end detection LED light receiving section (TE-1 board) with vinyl tape, etc. and do loading.
2) Remove timing belt ❶ and stopper washer ❷, gear flange ❸ and conversion gear assembly ❹. (Fig. 3-51)
3) Short between SS-38C board resistor R10, IC101 side, and ground.
4) Remove the pinch press arm side of the tension coil spring on the pinch press arm assembly (round hook side). (Fig. 3-52)
5) Press the erase prevention pin on the RECOG switch and hold down with tape, etc., then press the REC button. (Fig. 3-53)
6) Measure the voltage (Vo) between MD-8B board CAP I_1 and CAP I_2 with an analog tester. (unloaded state) (Fig. 3-54)
7) Mount conversion gear assembly ❹, gear flange ❸, stopper washer ❷ and dynamic belt ❶.
8) Remove drive gear (B).
9) Press the REC button as in step 5), and measure the voltage (Vx) between CAP I_1 and I_2 as in step 6). (for tension adjustment)
10) Confirm that the voltage (Vx) measured for tension adjustment is 5 mV-10 mV higher than that measured (Vo) in unloaded state. If not, adjust as follows.
    Adjustment Procedure:
    i) Loosen screw ❶ and slide the idler assembly as shown by arrow Ⓐ, then tighten screw ❶. (Fig. 3-55)
    ii) Check again following step 9).
    iii) Repeat i) and ii) until the specifications are met.
11) Remove the short performed in step 3).
12) Mount the tension gear (B) and pinch press arm assembly tension coil spring.

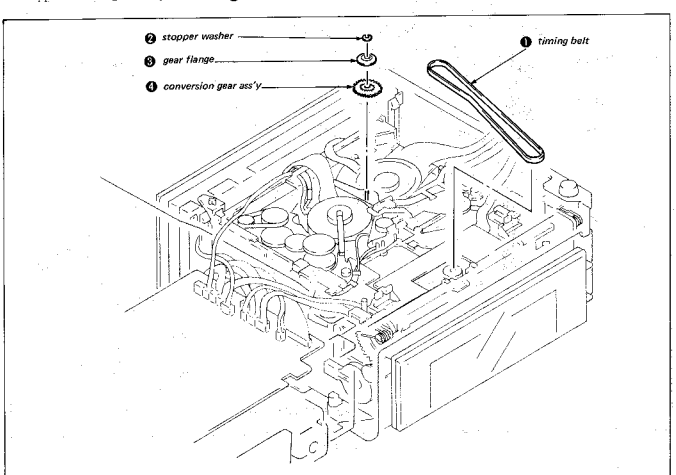


Fig. 3-51.

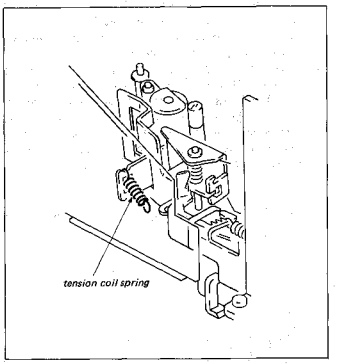


Fig. 3-52.

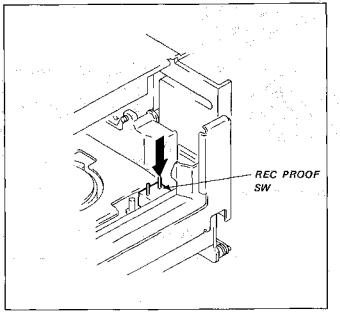


Fig. 3-53.

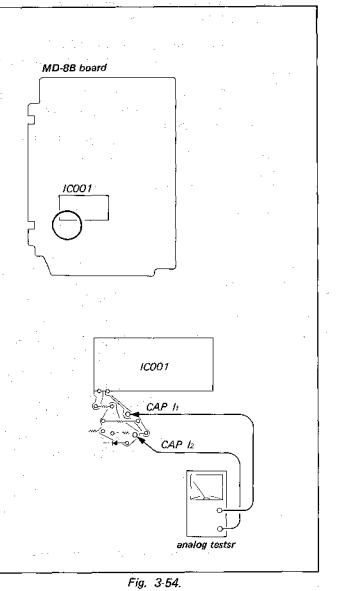


Fig. 3-54.

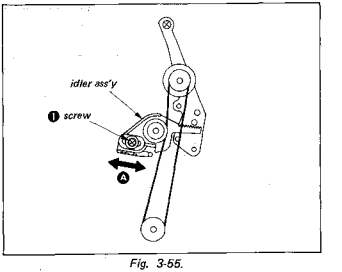


Fig. 3-55.

3. Drive Gear (L) Replacement and Adjustment

1) Remove the cassette compartment assembly according to Section 2, 2-3.
2) Remove screw ❶ and FC harness cover ❷.
3) Release C lock plate ❸ and raise FC holder assembly ❹.
4) Remove screw ❺ and damper ❻.
5) Remove stopper washer ❼ and relay gear ❽.
6) Replace drive gear (L) ❾.
7) Insert thin rods into drive gear (L) ❾ positioning hole ❿ and door gear L positioning hole ⓫ and confirm that they go through.
8) Mount the relay gear ❽ and stopper washer ❼.
9) Close cassette compartment cover (L) assembly ⓬ and confirm that the FC holder assembly ❹ locks.
10) Confirm that the cassette compartment cover (L) assembly ⓬ and FC side plate L ⓭ are parallel.
11) Mount damper ❻ and tighten screw ❺.
12) Mount FC harness cover ❷ and tighten screw ❶.
13) Release C lock plate ❸ and confirm that the FC holder assembly ❹ comes up and the cassette compartment cover (L) assembly ⓬ opens. Also, confirm that the FC holder assembly ❹ goes down and locks when the cassette compartment cover (L) assembly ⓬ is closed. (Fig. 3-58)
14) Mount the cassette compartment assembly, following the procedure in Section 2, 2-3, in reverse.

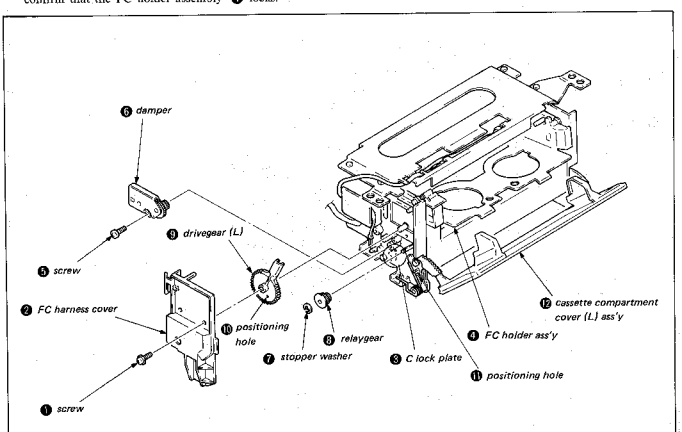


Fig. 3-58.

4. Door Gear L Replacement and Adjustment

1) Remove the cassette compartment assembly according to Section 2, 2-3.
2) Remove screw ❶ and FC harness cover ❷.
3) Release C lock plate ❸ and raise FC holder assembly ❹.
4) Remove coil spring ❺.
5) Remove stopper washer ❻ and relay gear ❼.
6) Remove screw ❽ and replace door gear L ❾.
7) Insert a thin rod into door gear L ❾ positioning hole ❿ and drive gear L positioning hole ⓫.
8) Engage the relay gear ❼ with both gears and mount stopper washer ❻.
9) Temporarily tighten screw ❽.
10) Remove the two rods.
11) Close cassette compartment cover (L) assembly ⓬ and confirm that the FC holder assembly ❹ locks.
12) Insert a finger between the cassette compartment cover (L) assembly ⓬ and FC side plate L ⓭ so that they are parallel, and tighten screw ❽.
13) Mount coil spring ❺.
14) Mount FC harness cover ❷ and tighten screw ❶.
15) Release C lock plate ❸ and confirm that the FC holder assembly ❹ comes up and cassette compartment cover (L) assembly ⓬ opens. Also, confirm that the FC holder assembly ❹ goes down and locks when the cassette compartment cover (L) assembly ⓬ is closed. (Fig. 3-59)
16) Mount the cassette compartment assembly by following the procedure in Section 2, 2-3. in reverse.

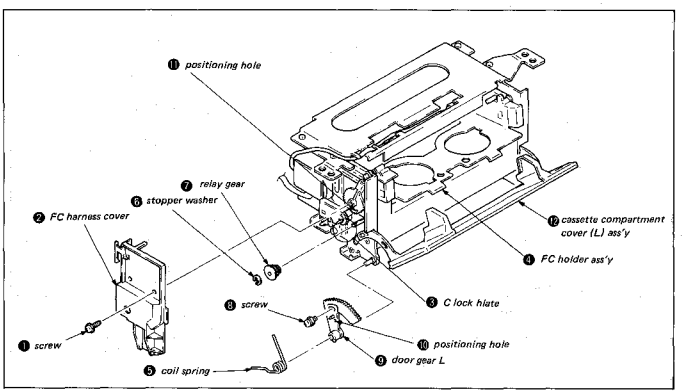


Fig. 3-59.

3-24. Check of S and T Main Brake Torque

1) Remove the front panel according to Section 2, 2-1.
2) Remove the cassette compartment assembly accroding to Section 2, 2-3.

1. S Main Brake Torque

1) Set to FF/REW mode.
2) Place the tension measurement reel (Ref No.J-8) on the S reel table.
3) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are satisfied. (Fig. 3-60, 3-61)

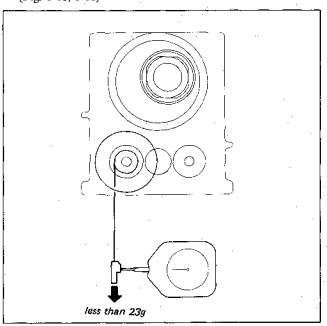


Fig. 3-60.

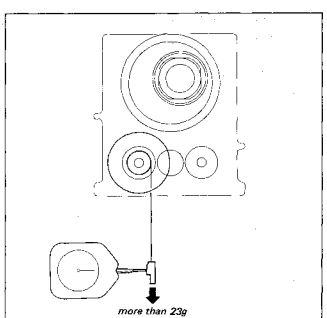


Fig. 3-61.

2. T Main Brake Torque

1) Set to FF/REW mode.
2) Place the tension measurement reel (Ref No.J-8) on the T reel table.
3) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are satisfied. (Fig. 3-62, 3-63)

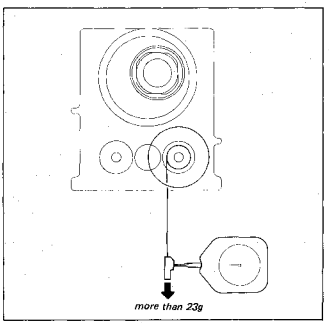


Fig. 3-62.

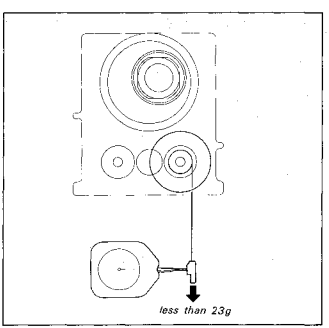


Fig. 3-63.

3-25. Check of S and T Soft Brake Torque

1) Remove the front panel according to Section 2, 2-1.
2) Remove the cassette compartment assembly according to Section 2, 2-3.

1. S Soft Brake Torque

1) Set to FF/REW mode.
2) Place the tension measurement reel (Ref No.J-8) on the S reel table.
3) Release the S main brake with a finger.
4) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are satisfied. (Fig. 3-64)

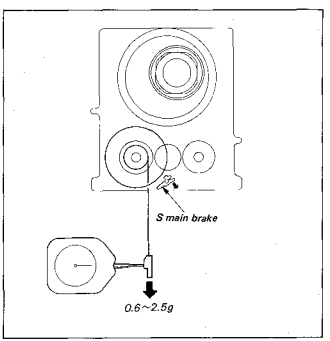


Fig. 3-64.

2. T Soft Brake Torque

1) Set to REV mode.
2) Place the tension measurement reel (Ref No.J-8) on the T reel table.
3) Release the T main brake with a finger.
4) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are met. (Fig. 3-65)

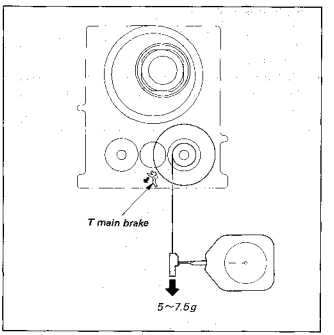


Fig. 3-65.

3-26. Check of REV and REW Brake Torque

1) Remove the front panel according to Section 2, 2-1.
2) Remove the cassette compartment assembly according to Section 2, 2-3.

1. REV Brake Torque

1) Set to REV mode.
2) Place the tension measurement reel (Ref No.J-8) on the S reel table.
3) Release the S main brake with a finger.
4) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are satisfied. (Fig. 3-66)

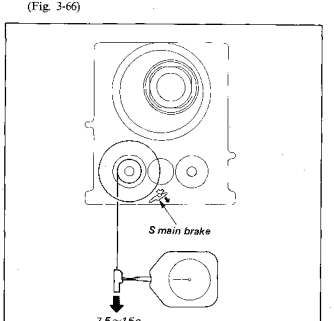


Fig. 3-66.

2. REW Brake Torque

1) Set to FF/REW mode.
2) Place the tension measurement reel (Ref No.J-8) on the T reel table.
3) Pull the dial tension gauge (Ref No.J-6) in the direction of the arrow and confirm that the specifications are met. (Fig. 3-67)

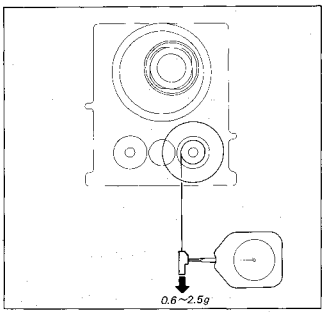
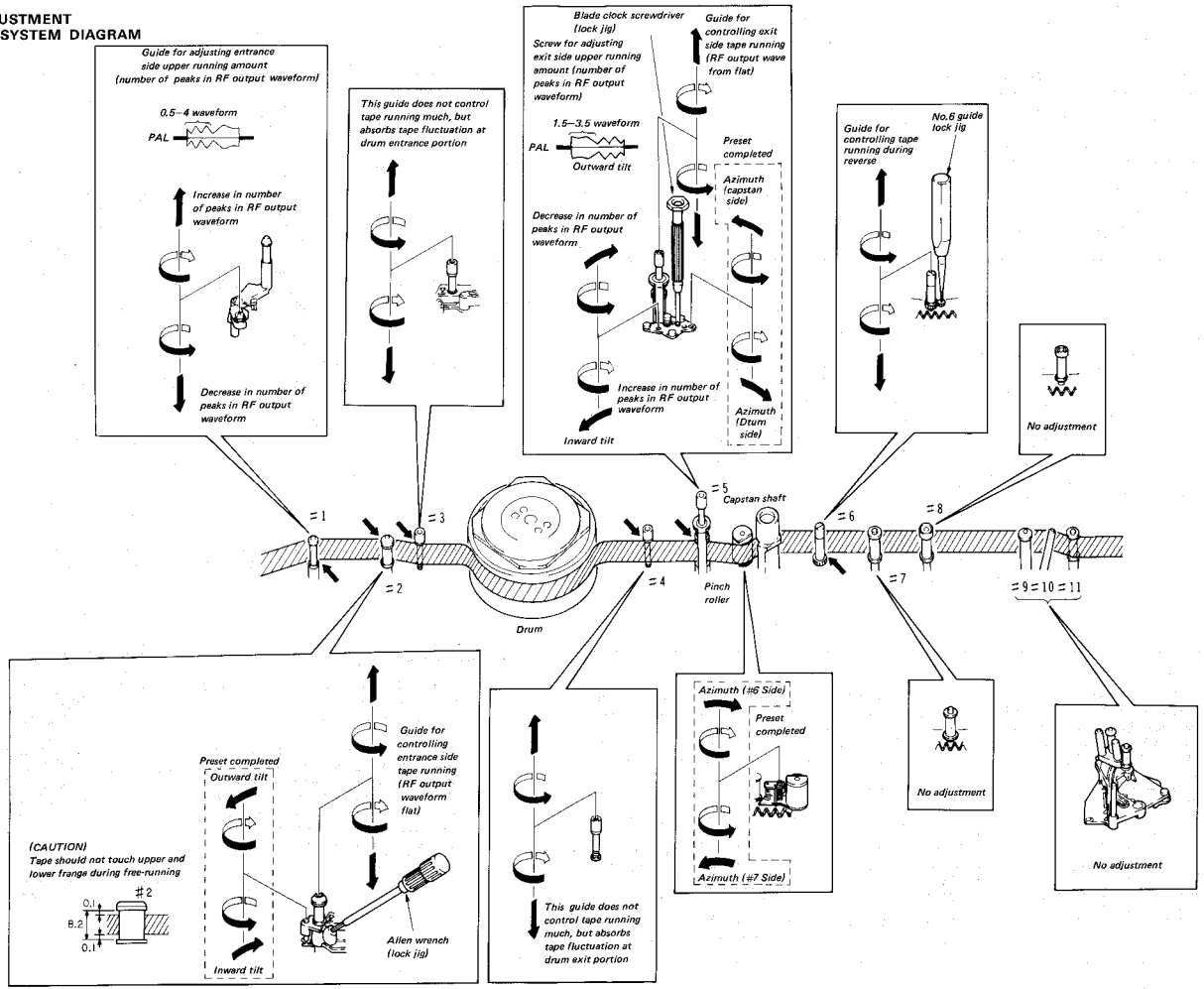


Fig. 3-67.

3-27. Check by FWD, RVS Winding Torque Cassette

1) Insert the FWD, RVS winding torque cassette (Ref No.J-12).
2) Set for playback mode and confirm that T reel table torque is 9.5~15.5 g• cm.
3) Set for playback mode, and check that the S reel torque immediately after the REW button is pressed is 17-23 g• cm.
4) Replace the appropriate reel table if the above specifications are not met.

4. TAPE PATH ADJUSTMENT
TAPE RUNNING SYSTEM DIAGRAM


Guide for adjusting entrance side upper running amount (number of peaks in RF output waveform)
0.5–4 waveform
PAL
Increase in number of peaks in RF output waveform
Decrease in number of peaks in RF output waveform
This guide does not control tape running much, but absorbs tape fluctuation at drum entrance portion
Blade clock screwdriver (lock jig)
Guide for controlling exit side tape running (RF output wave from flat)
Screw for adjusting exit side upper running amount (number of peaks in RF output waveform)
1.5–3.5 waveform
PAL
Outward tilt
Preset completed
Azimuth (capstan side)
Decrease in number of peaks in RF output waveform
Increase in number of peaks in RF output waveform
Azimuth (Drum side)
Inward tilt
Guide for controlling tape running during reverse
No.6 guide lock jig
No adjustment
=1
=2
=3
=4
=5
Capstan shaft
=6
=7
=8
=9=10=11
Drum
Pinch roller
Preset completed
Outward tilt
Guide for controlling entrance side tape running (RF output waveform flat)
(CAUTION)
Tape should not touch upper and lower frange during free-running
#2
0.1
8.2
0.1
Allen wrench (lock jig)
Inward tilt
This guide does not control tape running much, but absorbs tape fluctuation at drum exit portion
Azimuth (#6 Side)
Preset completed
Azimuth (#7 Side)
No adjustment
No adjustment

*** Perform this adjustment after confirming that the electrical adjustment of Section 5 has been completed.**

4-1. Preparation for adjustment

1) Perform cleaning of the tape running surface (the individual tape guides, drums, capstan shafts and pinch rollers).
2) Connection of an oscilloscope
   1ch: Pin ② of CN6 (RP-25B board) : CH-2 output
   2ch: Pin ① of CN6 (RP-25B board) : Exterior trigger
   (See Fig. 4-1)

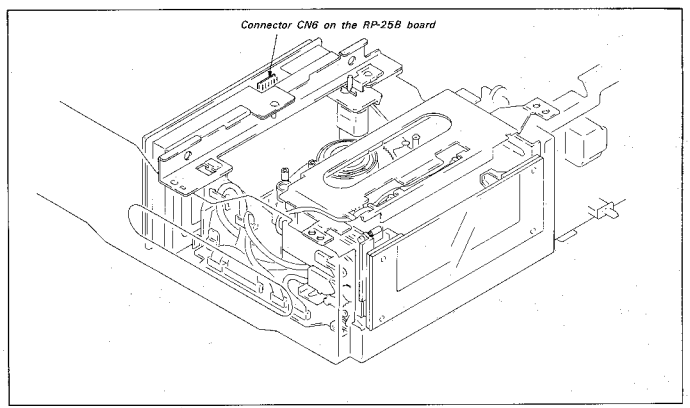


Fig. 4-1

3) Play back the alignment tape WR-5-IC for tracking, and confirm that the RF waveform of both the inlet and outlet sides become flat (Fig. ⓐ in 4-2). If the RF waveform of both sides is not flat, the adjustment should be carried out in accordance with the following.

* In case the RF waveform on the inlet side is not flat (Fig. ⓑ in 4-2) . . . Perform the adjustment in accordande with Item 4-2, Inlet side adjustment.

* In case the RF waveform on the outlet side is not flat (Fig. ⓒ in 4-2) . . . Perform the adjustment in accordance with Item 4-3, Outlet side adjustment.

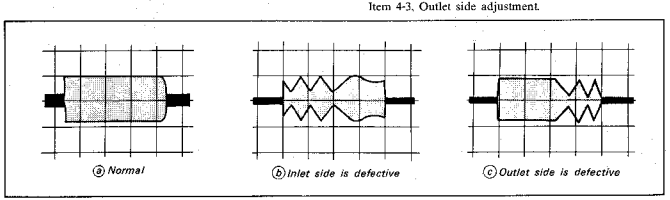


Fig. 4-2

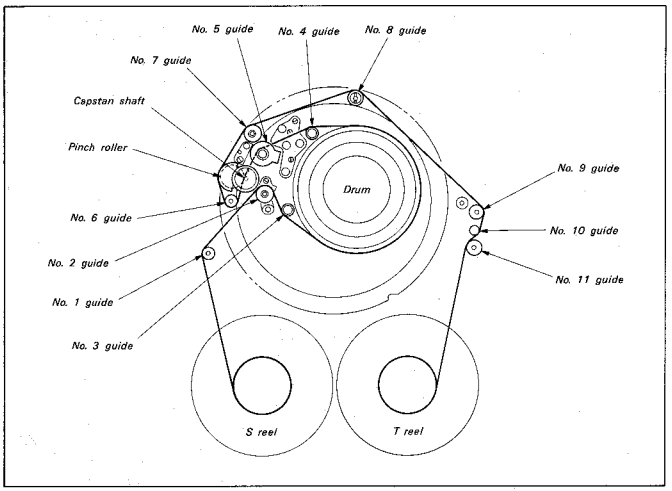


Fig. 4-3. Tape guide arrangement diagram

4-2. Inlet side adjustment

1) Play back the tracking alignment tape, and loosen No. 2 guide lock screw ❶ , and rotate No. 2 and No. 3 guides counterclockwise to set free the tape running on the inlet side. (See Fig. 4-4)

   Note: Since the space between the top and bottom flanges of No. 2 guide is narrow, confirm that the tape is contacting neither top nor bottom flanges at this point. If No. 2 guide is loosened excessively, the tape contacts the bottom flange and the RF waveform on the inlet side will have more then four ridges.

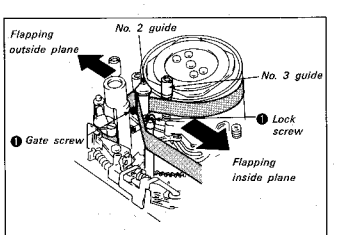


Fig. 4-4

2) Confirm that the RF waveform on the inlet side has 1 to 6 ridges in this conditon. If not, adjust as follows. (See Fig. 4-5)

Note: Do not touch the No. 2 guide gate screw ❷ since it has been preset at the factory. If it is off standard, adjust the height adjustment screw of No. 1 guide (tension regulator assembly) by turning it clockwise 90 at a time. (See Fig. 4-6)

3) Slowly rotate the No. 2 guide clockwise to make the in let side waveform nearly flat (See Fig. 4-6)

Note: Do not rotate No. 2 guide excessively.

4) Rotate No. 3 guide clockwise to make the inlet side waveform completely flat, and then rotate slightly (approximately 15°) (See Fig. 4-8)

5) Check the tape curl at No. 3 guide flange. If tape curling occurs, rotate No. 2 guide clockwise little by little until the curling disappears.

6) Tighten No. 2 lock screw ❶ . (See Fig. 4-4)

Note: Be sure to perform checking in accordance with 4-4.

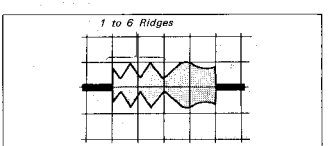


Fig. 4-5

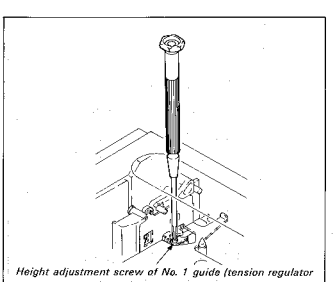


Fig. 4-6

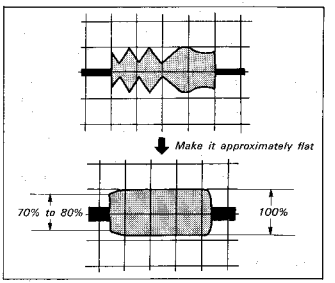


Fig. 4-7

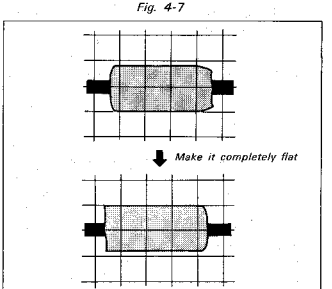


Fig. 4-8

4-3. Outlet side adjustment

1) Play back the alignment tape for tracking, and rotate No. 5 guide clockwise in order to make the tape running on the outlet side free. (See Fig. 4-9)

Note:
- **If a screw lock agent is stuck to the No. 5 guide nut, it may prevent the nut from rotating. Rotate the guide after immersing alcohol into the nut thread and by dissolving the screw lock agent.**
- **Check that the tape is not contacting the top and bottom of flanges of No. 5 guide during free tape running.**

2) Check that the RF waveform on the outlet side has 3 to 6 ridges. If not, readjust as follows : (See Fig. 4-10)

If off standard

i) Rotate the lock screw ❶ counterclockwise to loosen.
ii) Slowly rotate the gate screw ❷ by 45° at a time and wait until the RF waveform varies.
iii) Rotate the lock screw ❶ clockwise to tighten. (See Fig. 4-9)

Note:
- **The waveform varies if the lock screw is tightened too strongly. Tighten moderately.**
- **Never rotate the azimuth screw of No. 5 guide.**

3) Rotate No. 5 guide counterclockwise to make the RF waveform on the outlet side approximately flat. (See Fig. 4-11.)

Note: The waveform reaction is slow against nut rotation. Rotate the nut after the waveform variations are stabilized.

4) Rotate No. 4 guide clockwise to make the RF waveform on the outlet side completely flat and slightly rotate clockwise (approximately 15°) from this condition. (See Fig. 4-12.)

5) Check tape curling of No. 4 guide flange. Rotate No. 5 guide nut counterclockwise little by little until curling is eliminated if the tape is curled.

Note: Be sure to check inaccordance with 4-4 after making the adjustment.

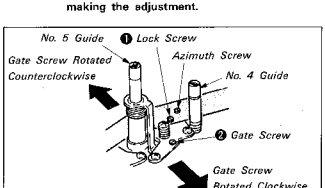


Fig. 4-9.

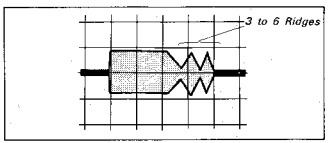


Fig. 4-10.

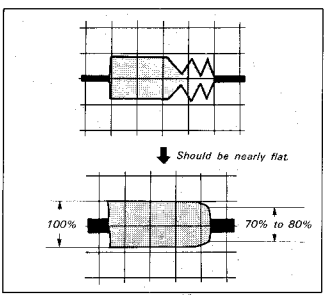


Fig. 4-11.

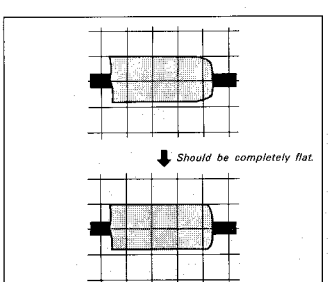


Fig. 4-12.

4-4. Checking After Adjustment

1. Tracking check

1) Record TV signals, play back recorded signals, and confirm that quality of both pictures and sounds is satisfactory.
2) Play back the tracking alignment tape and confirm that the RF waveforms do not have large variations.
3) Set up the REV mode and confirm that the waveform noise pitches are uniform. If not, adjust as follows. (See Fig. 4-13.)

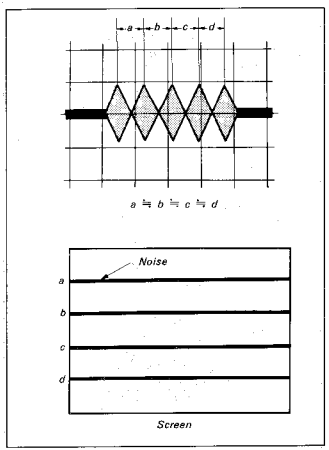


Fig. 4-13.

[Narrow noise pitch on inlet side (upper screen)]
(See Fig. 4-14.)
Confirm that the RF waveforms are flat in the PLAYBACK mode.
Waveform is not flat:
Adjust the heights of No. 2 and 3 guides as in 4-2. Inlet side adjustment.
Waveform is flat:
Rotate No. 1 guide (tension regulator height adjustment screw) and No. 2 guide gate screw 90° counterclockwise to check again. (See Fig. 4-6.)

[Narrow noise pitch on outlet side (lower screen)]
(See Fig. 4-15.)
Set up the PLAYBACK mode and adjust No. 4 and 5 guide heights in accordance with 4-3. Outlet side Adjustment.

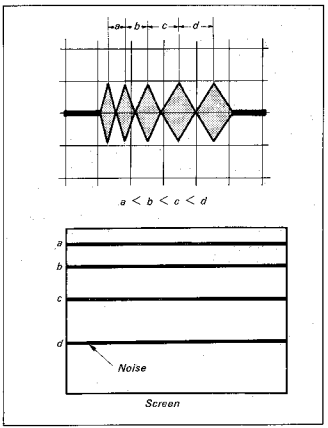


Fig. 4-14.

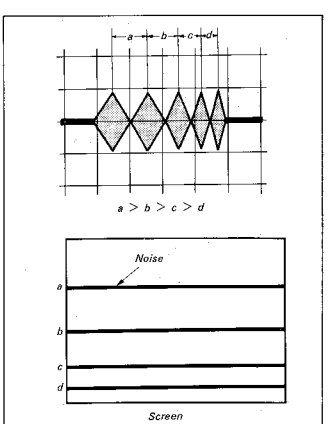


Fig. 4-15.

[Wide noise pitch on outlet side (lower screen)]
(See Fig. 4-16.)
Set up the PLAYBACK mode and confirm that the RF waveform is flat.
Waveform is not flat:
Adjust height of No. 4 and 5 guides in accordance with 4-3. Outlet side adjustment.
Waveform is flat:
Rotate the guide lower toothed wheel counterclockwise with No. 6 guide lock jig (Ref. No. J-11) to loosen the toothed wheel. Rotate No. 6 guide counterclockwise 45° to tighten the lower toothed wheel. Confirm the RF waveform of the REV mode again. (See Fig. 4-17.)

Note: Wrinkles may be caused in Part Ⓐ between the capstan spindle and No. 5 guide, if No. 6 guide is raised excessively. Confirm that no wrinkles have been caused. (See Fig. 4-18.)

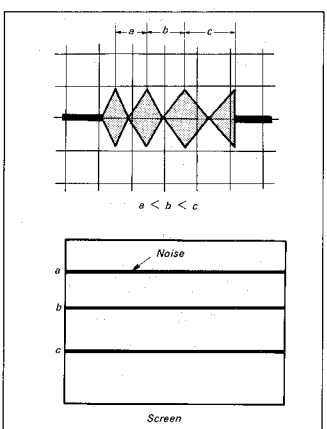


Fig. 4-16.

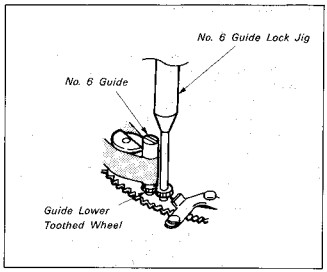


Fig. 4-17.

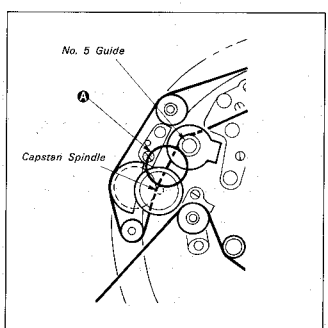


Fig. 4-18.

2. Checking rising edge

1) Check that the RF waveform rises horizontally during playing back after finishing loading, after CUE/REV, and during playing back after FF. If not, adjust as follows.

[Noise emits from the outlet side (lower screen) with rising during playing back after finishing loading]
(See Fig. 4-19.)
Check that the FWD back tension is not too low.
If too low:
Readjust as instructed in 3-21. FWD back tension adjustment.
If normal:
Rotate the azimuth screw of the pinch roller clockwise by 15° at a time and adjust after rechecking the rising edge. (See Fig. 4-20.)

[Noise emits from the outlet side (lower screen) with rising during playing back after REV]
(See Fig. 4-19.)
Loosen the guide lower toothed wheel of No. 6 guide using No. 6 guide lock jig, rotate No. 6 guide 90° counterclockwise to tighten the toothed wheel, then recheck the rising edge.
Note: Wrinkles may be caused in Part Ⓐ of Fig. 4-18, if No. 6 guide is raised excessively at this time, between the capstan spindle and No. 5 guide, so check that no wrinkles are caused.

[Noise emits from the outlet side (lower screen) with rising during palying back after FF]
(See Fig. 4-19.)
Confirm that the FWD back tension is not too low.
If too low:
Readjust as required in 3-21. FWD back tension adjustment.
If normal:
Rotate the azimuth screw of the pinch roller clockwise by 15° at a time and adjust after checking the rising edge. (See Fig. 4-20.)
Note: Be sure to check playback rising after finishing loading in case an adjustment is made.

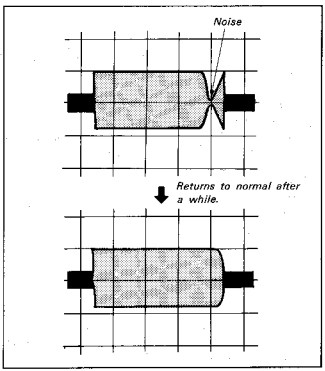


Fig. 4-19.

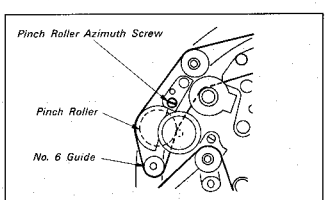


Fig. 4-20.

3. Tape running check

Confirm that the tape is not raised or curled at each guide flange of No. 1 to 6 (pointed by the arrows in Fig. 4-21.) in PLAYBACK, CUE and REV modes.

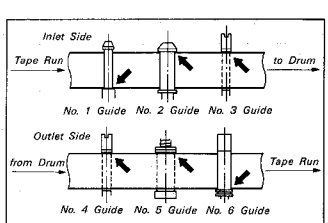


Fig. 4-21.

5. ELECTRICAL ADJUSTMENT

The following measuring instruments are needed for electrical adjustment.

[Equipment]

1) Monitor TV
2) Oscilloscope, dual trace, band 10 MHz or wider, with delay mode (Use a 10:1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tapes
    Tracking adjustment (WR5-1C)
    Parts code: 8-967-995-06
    Video frequency response adjustment (WR5-2C)
    Parts code: 8-967-995-16
    Operation check (WR5-3CL)
    Parts code: 8-967-995-36
    Operation check (WR5-3CSP) Parts code: 8-967-995-27

[Equipment Connection]

Unless otherwise specified, adjustment is made by connecting the measuring instruments as shown below.

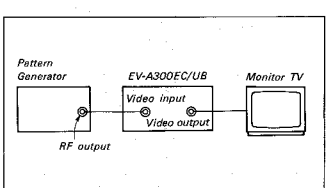


Fig. 5-1.

Setting up during adjustment

Video signals output by a pattern generator are used as adjustment signals when making the electrical adjustments, and these video output signals should be within the required standard. Connect an oscilloscope to Pin ⑳ of CN006 (VIDEO IN) on the VI-9B Board. Check that the amplitudes of video signal SYNC signals, picture portions, and burst signals are flat at approximately 0.3, 0.7, and 0.3V, respectively, and that the level ratio of the burst signal and "red" signal is 0.30:0.66. Fig. 5-2. shows video signals (colour bars) used in making the electrical adjustment.

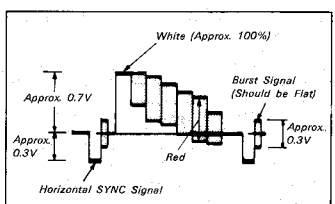
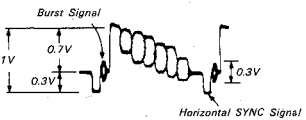
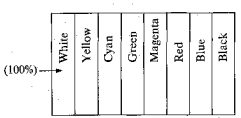


Fig. 5-2. Pattern Generator Colour Bar Signals

[Alignment tape]

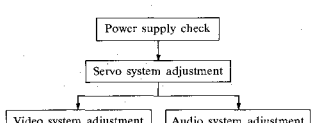
Tape	Content	Use
Tracking (WR5-1C)	1. Recording area: PCM — video 2. Recording content: CH2: 1 MHz linearity adjustment signal (CH1: 9 MHz)	Drum linearity adjustment
Video Frequency Response (WR5-2C)	1. Recording area: Video 2. Recording content: RF sweep 0 to 10 MHz 3. Marker: 1, 3.58, 5.5 and 7 MHz	Grequency response adjustment
Operation Check SP mode WR5-3CSP LP mode (WR5-3CL)	1. Recording area: Video 2. Recording content: ■ Video track • Video signals Colour bars 10 sec Monoscope 8 sec } Iterative (Colour bars)   • Audio signals (AFM) 400 Hz 60% modulation ■ PCM track (WR5-3CSP only) • Audio signals (PCM) 1kHz 0dBs 10sec 20Hz −6dBs 2sec 400Hz −6dBs 4sec 14kHz −0.7dBs 2sec } Iterative	Operation check

Input/output level and impedance of EUROCONNECTOR

Video input (Pin ⑳)
Input signals: 1 Vp-p, 75Ω unbalanced, sync negative
Video output (Pin⑲)
Output signals: 1 Vp-p, 75Ω unbalanced, sync negative
Audio input (Pin ⑥)
Input level: −6 dBs (0 dBs = 0.775 Vrms)
Input impedance: 10 kΩ or higher
Audio output (Pins ① and ③)
Regulated output: −6 dBs
Load impedance: 1 kΩ or lower

Adjustment Procedure

Adjust in the following sequence:



5-1. Power Supply Check

Measure in E-E mode.

1) REG 9V Check (PS-52A board)
   Voltage between CN209 Pin ③ (9V) and CN209 Pin ⑥ (GND) should be 9.0 ±0.1V DC.
2) REG 5V Check (PS-52A board)
   Voltage between CN206 Pin ① (5V) and CN206 Pin ② (GND) should be 5.1 ±0.1V DC.
3) UN SWD 5V Check (PS-52A board)
   Voltage between CN207 Pin ⑥ (UN SWD 5V) and CN207 Pin ① (GND) should be 5.4 ±0.2V DC.
4) Back up 5V Check (PS-52A board)
   Voltage between CN207 Pin ⑦ (Back up 5V) and CN207 Pin ① (GND) should be 5.4 ±0.2V DC.
5) DRIVE 5V Check (PS-52A board)
   Voltage between CN207 Pin ② (DRIVE 5V) and CN207 Pin ① (GND) should be 5.4 ±0.2V DC.
6) DRIVE 9V Check (PS-52A board)
   Voltage between CN208 Pin ④ (DRIVE 9V) and CN208 Pin ③ (GND) should be 8.6 ±0.2V DC.
7) UN SWD 45V Check (PS-51A/B board)
   Voltage between CN103 Pin ② (UN SWD 40V) and CN102 Pin ③ (GND) should be 50 ±3V DC.
8) UN SWD −30V Check (PS-51A/B board)
   Voltage between CN102 Pin ① (UN SWD −30V) and CN103 Pin ② (GND) should be −28.5 ±1.5V DC.
9) AC 4.2V Check (PS-51A/B board)
   Voltage between CN101 Pin ③ (AC 4.2V) and Pin ⑤ (AC 4.2V) should be 4.0 ± 0.3 Vrms.
10) UN SWD 12.6V Check (PS-51A/B BOARD)
    Voltage between CN102 Pin ① (UN SWD 12.6V) and CN102 Pin ③ (GND) should be 12.6 ± 0.3VDC.

[Solder side]

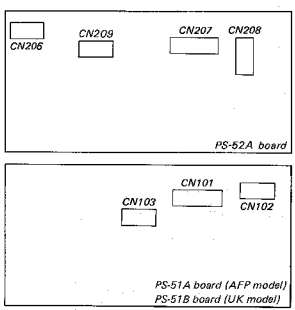


Fig. 5-3.

5-2. Servo System Adjustment

Note: Perform the following checks before performing servo system adjustment. (SS-38C board)

1) Drum Bias Check
Check that IC201 Pin ⑫ DC voltage is 2.0 ±1.0V in REC, SP/LP modes.

2) Drum Phase Lock Check
Make sure that it is within the range shown in Figure 5-4 in REC, SP/LP modes.

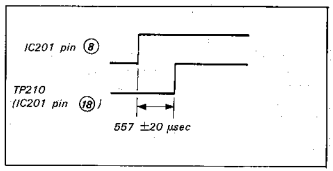


Fig. 5-4.

5-2-1. Capstan DC Bias Adjustment (SS-38C board)

Within the brackets [ ] indicates LP mode adjustment elements.
Mode: Playback
Tape: Optional
Frequency counter: TP204 (IC201 Pin ㉓ : CAP FG)
Connection: Connect a 47 µF/6.3V power supply capacitor between TP301 (IC301 Pin ①) and GND. (positive pole on TP301 side)

[Adjustment Procedure]
Adjust to 1339±1 Hz [669±1 Hz] with RV102 [RV202].

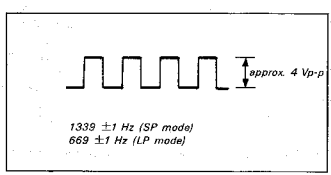


Fig. 5-5.

5-2-2. Switching Position Adjustment (SS-38C, VI-9B Boards)

Mode: PLAYBACK
Alignment tape: Operation check (WR5-3CSP)
Oscilloscope CH1: VI-9B Board Pin ⑲ of CN006 (VIDEO OUT)
CH2: SS-38C Board Pin ⑧ of IC201 (RF SW PULSE)
[Adjustment Procedure]
Adjust to 6.5 ±0.3H (416 ±20 μsec) using RV203 on the SS-38C Board.

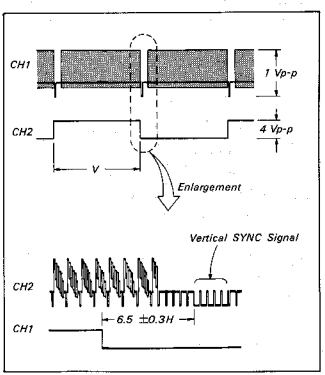


Fig. 5-6. Switching Position Adjustment

5-2-3. Tracking Adjustment (SS-38C, RP-25B boards)

Mode: Playback
Tape: Self-recorded tape
SP/LP: SP mode
Input: LINE mode
Recorded with no signal input
Oscilloscope: RP-25B board CN6 Pin ⑤ (RF OUT)
[Adjustment Procedure]
Adjust so that RF output level is maximum with SS-38C board RV301.

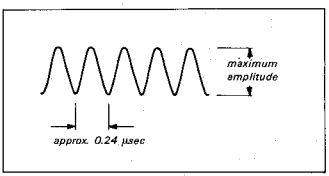


Fig. 5-7.

5-2-4. Frame-by-Frame Adjustment (SS-38C board)

Mode: Playback Pause + continuous frame-by-frame (step button pressed continuously)
Tape: self-recorded tape
SP mode adjustment elements are in the brackets [ ].
[Adjustment Procedure]
Adjust RV402 [RV401] so that there is no noise [less that 1/4 at top and bottom of picture] on the monitor picture.
After adjustment, check by repeating PB PAUSE → frame-by-frame (5 sec) → PB PAUSE three times, and readjust if necessary.
Note: Perform adjustment more than 3 seconds after switching to frame-by-frame.

5-3. Video System Adjustment

As a general rule, perform video adjustments in the order given below.

The color video signal supplied from a pattern generator is used as the recording mode video system adjustment video input signal. Confirm that the color burst signal and sync signal are within the specifications given in −2., set-up for adjustment.

[Adjustment order]

1) Playback Frequency Response Adjustment
2) Flying Erase Check
3) X'tal Oscillator fo Adjustment
4) SYNC AGC Pre-Adjustment
5) Y/C Separation Adjustment
6) Y Comb AGC Adjustment
7) SYNC AGC Adjustment
8) VIDEO OUT Level Adjustment
9) PB Y Level Adjustment
10) PB PAUSE Colour Level Adjustment
11) Y FM Carrier Frequency Adjustment
12) REC Y Level Adjustment
13) Y FM Deviation Adjustment
14) White Clip Adjustment
15) 375 fH VCO Adjustment
16) Chroma Emphasis fo Adjustment
17) Carrier Balance Adjustment
18) REC C Level Adjustment
19) REC Y ATF Level Adjustment
20) PCM ATF Level Adjustment
21) REC Y Current Adjustment
22) REC PCM Current Adjustment

5-3-1. Playback Frequency Response Adjustment (RP-25B Board)

• CH1, CH2

CH2 adjusting elements are shown in [ ].

Mode: PLAYBACK

Alignment tape: Frequency response adjustment (WR5-2C)

Oscilloscope CH1: Pin ③ of CN006 [Pin ② of CN006]

External trigger: Pin ① of CN006 [Pin ① of CN006]

Trigger slope: +, [−]

[Adjustment Procedure]

Adjust the ratio between the 3.58 and 5.5 MHz levels to 3:2 [4:3] using RV002 [RV001].

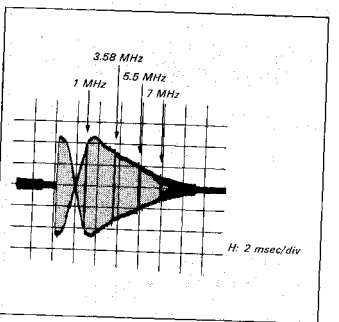


Fig. 5-8. Playback Frequency Response Adjustment

• CH1'

Mode: PLAYBACK PAUSE

Alignment tape: For operation check (WR5-3CL)

[Adjustment Procedure]

Adjust RV200 so that there is no black or white trailing noise at the top of the monitor picture for a monoscope pattern.

5-3-2. Flying Erase Check (RP-25B Board)

Mode: RECORD
Oscilloscope: Pin ① of CN005
[Checking Procedure]
The oscillation frequency should be 7 MHz or more and level, 7.5 Vp-p or more.

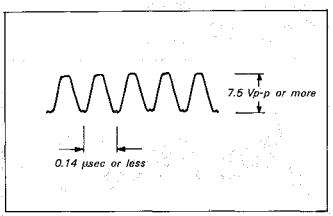


Fig. 5-9. Flying Erase Check

5-3-3. X'tal Oscillator fo Adjustment (VI-9B Board)

Mode: PLAYBACK
Alignment tape: For operation check (WR5-3CSP)
Frequency counter: Pin ⑧ of IC003
Note: Connect the frequency counter through a buffer with high impedance (approx. 10 MΩ) and low capacity (less than 10 pF).
[Adjustment Procedure]
Adjust to 4.433619 ±50 Hz with CV200.

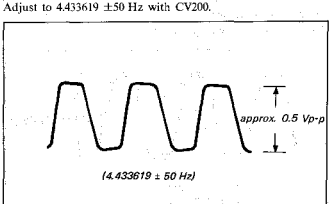


Fig. 5-10. X'tal Oscillator Adjustment

5-3-4. SYNC AGC Pre Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Digital voltmeter or oscilloscope: Pin ⑫ of IC001
[Adjustment Procedure]
Adjust to 2.5 ±0.1 V dc with RV001

5-3-5. Y/C Separation Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ⑳ of IC002
Connection: Connect Q107 base to REG GND.
[Adjustment Procedure]
Adjust RV100 and LV100 alternately to minimize residual chroma components.

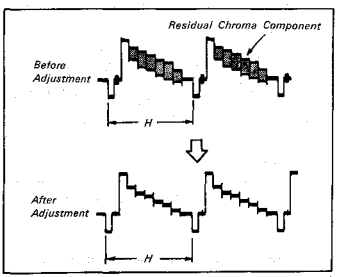


Fig. 5-11. Y/C Separation Adjustment

5-3-6. Y Comb AGC Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ③ of IC002
Connect a 22 kΩ resistor serially between Pin ③ of IC002 and 10:1 probe.
[Adjustment Procedure]
Minimize the amplitude with RV101.

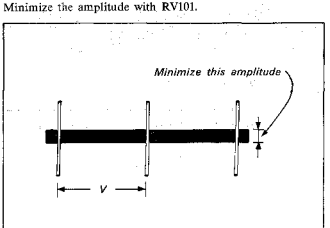


Fig. 5-12. Y Comb AGC Adjustment

5-3-7. SYNC AGC Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Emitter of Q007
VIDEO LINE OUT pin EUROCONNECTOR CN006 ⑲ should be terminated with 75Ω.
[Adjustment Procedure]
Adjust to 0.50 ± 0.05 Vp-p with RV001.

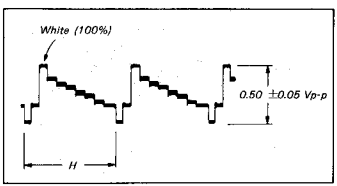


Fig. 5-13. SYNC AGC Adjustment

5-3-8. VIDEO OUT Level Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ⑲ of CN006 (VIDEO OUT)
VIDEO LINE OUT pin EUROCONNECTOR CN006 ⑲ should be terminated with 75Ω.
[Adjustment Procedure]
Adjust to 1.00 $^{+0.05}_{-0}$ Vp-p with RV002.

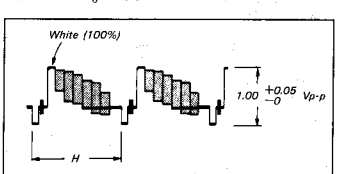


Fig. 5-14. VIDEO OUT Level Adjustment

5-3-9. PB Y Level Adjustment (VI-9B Board)

Mode: PLAYBACK
Alignment tape: For operation check, (WR5-3CSP) colour bar portion
Oscilloscope: Pin ⑲ of CN006
VIDEO LINE OUT pin EUROCONNECTOR CN006 ⑲ should be terminated with 75Ω.
[Adjustment Procedure]
Adjust to 1.00 ± 0.05 Vp-p with RV006.

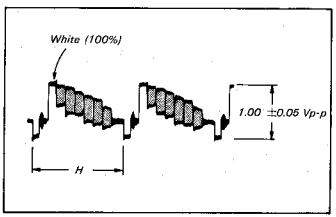


Fig. 5-15. PB Y Level Adjustment

5-3-10. PB PAUSE Colour Level Adjustment (VI-9B Board)

Mode: PLAYBACK PAUSE
Alignment tape: For operation check, (WR5-3CSP) colour bar portion
Oscilloscope: Pin ㉗ of IC006
[Adjustment Procedure]
Adjust to 500 ± 25 mVp-p with RV103.

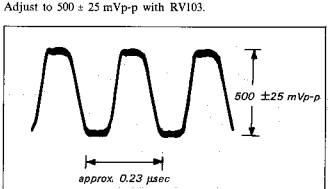


Fig. 5-16. PB PAUSE Colour Level Adjustment

5-3-11. Y FM Carrier Frequency Adjustment (VI-9B Board)

Mode: E-E
Input signal: None
Frequency counter: TP200 (Pin ⑥ of CN003)
[Adjustment Procedure]
Adjust to 4.20 ±0.05 MHz with RV003.

5-3-12. REC Y Level Adjustment (VI-9B Board)

Mode: E-E
Input signal: None
Oscilloscope: TP200 (Pin ⑥ of CN003)
[Adjustment Procedure]
Adjust to 0.46 ±0.01 Vp-p with RV203.

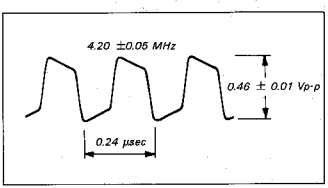


Fig. 5-17. REC Y Level Adjustment

5-3-13. Y FM Deviation Adjustment (VI-9B Board)

Adjustments of VIDEO OUT level, PB Y level, and Y FM carrier frequency must be finished.
Mode: Self-recording and PLAYBACK
Input signals: Colour bar
Oscilloscope: Pin ⑲ of CN006
VIDEO LINE OUT pin EUROCONNECTOR CN006 ⑲ should be terminated with 75Ω.
[Adjustment Procedure]
1) Record colour bar signals.
2) Play back recorded portions.
3) Check the playback output level.
Standard: 1.00 ±0.05 Vp-p
4) Rotate RV005 as follows and repeat Steps 1) through 3) when the value does not satisfy the standard.

	RV005 rotation direction seen from solder side
Larger than standard value	Counterclockwise (↶)
Smaller than standard value	Clockwise (↷)

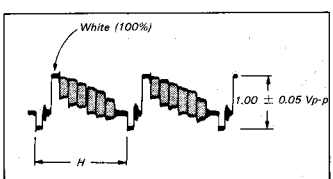


Fig. 5-18. Y FM Diviation Adjustment

5-3-14. White Clip Adjustment (VI-9B Board)

Mode: E-E
Input signal: Colour bar
Oscilloscope: TP003 (Pin ⑱ of IC001)
[Adjustment Procedure]
Adjust the peak of white (100%) portion to 235 — 240% with RV004.

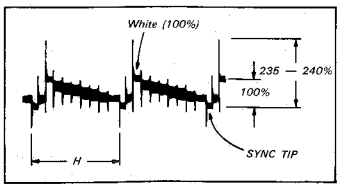


Fig. 5-19. White Clip Adjustment

5-3-15. 375 fH VCO Adjustment (VI-9B Board)

Mode: E-E
Input signal: Colour bar
Digital voltmeter: Pin ㉙ of IC003
[Adjustment Procedure]
Adjust to 3.00 ±0.05V DC with RV206.

5-3-16. Chroma Emphasis fo Adjustment (VI-9B Board)

Mode: E-E
Input signals: Colour bar
Oscilloscope: Pin ⑧ of IC004
Connection: Conect the following two places with resistors (47 kΩ).
Pin ㊶ of IC003 — Pin ㉓ of IC003 (REG 5V)
Pin ㊷ of IC003 — Pin ㊲ of IC003 (GND)
[Adjustment Procedure]
Minimize the amplitude of the flat portions of chroma signals with FL200.

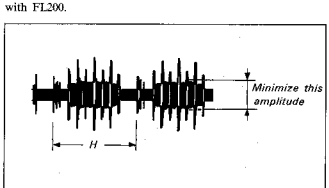


Fig. 5-20. Chroma Emphasis fo Adjustment

5-3-17. Carrier Balance Adjustment (VI-9B Board)

Mode: PLAYBACK
Alignment tape: For operation checking (WR5-3CL) colour bar portion.
Oscilloscope: Pin ㉜ of IC003
[Adjustment Procedure]
Minimize the 5.17 MHz component with RV202.

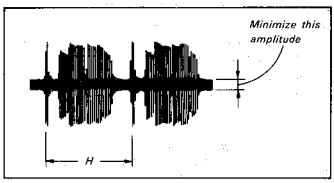


Fig. 5-21. Carrier Balance Adjustment

5-3-18. REC C Level Adjustment (VI-9B Board)

Mode: E-E
Tape: MP type (CN010 Pin ③ must be 0V DC)
Input signal: Colour bar
Oscilloscope: CN003 Pin ⑥ (REC Y/C/AFM)
Connection: Connect the following three points with jumpers:
Q008 emitter (REC Y) — GND
Q212 base (REC AFM) — GND
IC007 Pin ① (PILOT IN) — GND
[Adjustment Procedure]
Adjust red level to 84 ±9 mVp-p with RV201 (REC C ADJ).

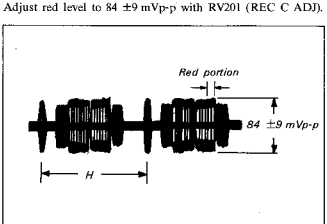


Fig. 5-22. REC C Level Adjustment

5-3-19. REC Y ATF Level Adjustment (VI-9B Board)

Mode: E-E
Tape : MP type (CN010 Pin ③ must be 0V DC)
Input signal: Colour bar
Oscilloscope: If CN003 Pin ⑥ (REC Y/C AFM) signal level is too small to read easily, do not use a 10:1 probe, but connect directly through a 100Ω resistor as shown in the diagram below.

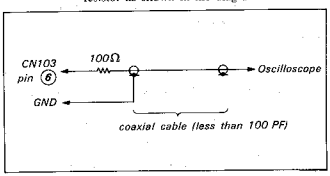


Fig. 5-23.

Connection: Connect the following three points with jumpers:
Q008 emitter (REC Y) — GND
Q200 base (REC C) — GND
Q212 base (REC AFM) — GND

[Adjustment Procedure]
Adjustment to 17 ±2 mVp-p with RV205.

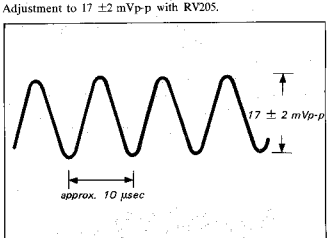


Fig. 5-24. REC ATF Level Adjustment

5-3-20. PCM ATF Level Adjustment (VI-9B, SS-38C Boards)

Mode: E-E
Tape: MP type (CN010 Pin ③ must be 0V DC)
Input signal: Colour bar
PCM connector: Nothing should be connected.
Oscilloscope: If CN003 Pin ③ (REC PCM) signal level is too small to read easily, do not use a 10:1 probe, but connect directly through a 100Ω resistor as shown in the diagram below.

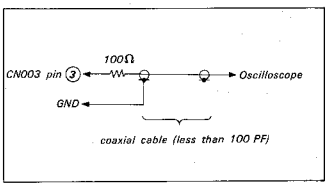


Fig. 5-25.

[Adjustment Procedure]
Adjust to 21 ±2 mVp-p with RV204 (PCM ATF).
Note: When there is a lot of noise, remove VI-9B board CN011 or SS-38C board CN111.

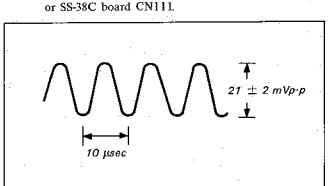


Fig. 5-26. PCM ATF Level Adjustment

5-3-21. REC Y Recording Current Adjustment (RP-25B, VI-9B Boards)

Mode: RECORD
Tape: MP typ (VI-9B board CN010 Pin ③ must be 0V DC)
Input signal: no signal
Oscilloscope: Connect the following two points on VI-9B board.
Q212 base (REC AFM) — GND
IC007 Pin ① (PILOT IN) — GND
[Adjustment Procedure]
Adjust to 200 mVp-p with RP-25B board RV3.

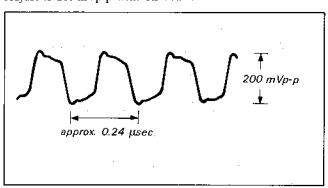


Fig. 5-27.

5-3-22. REC PCM Recording Current Adjustment

A. Using PCM Procedure (RP-25B, SS-38C, VI-9B boards)

Mode: RECORD
Tape: MP type (VI-9B board CN010 Pin ③ must be 0V DC)
Input signal: Colour bar
Oscilloscope: SS-38C board CN116 Pin ⑯ (REC RF) and RP-25B board IC1 Pin ㊲
PCM processor: Audio input signal is no signal input.
Connection: Connect the following two points on VI-9B board with jumpers:
Q203 base (REC Y/C/AFM) — GND
IC007 Pin ① (PILOT IN) — GND
[Adjustment Procedure]
1) Check that SS-38C board multiconnector CN116 Pin ⑯ (REC RF) REC PCM signal level is 500 ±60 mVp-p.
2) Adjust RP-25B board IC1 Pin ㊲ REC PCM signal level to 200 mVp-p with RP-25B board RV5.

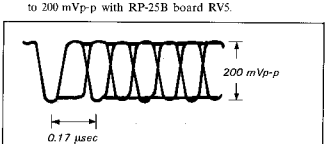


Fig. 5-28.

B. Method without using PCM Processor (RP-25B, SS-38C, VI-9B boards)

Mode: RECORD
Tape: MP type (VI-9B board CN010 Pin ③ must be 0V DC)
Input signal: Colour bar
Oscilloscope: RP-25B board IC1 Pin ㊲
If the signal level is too small to read easily, do not use a 10:1 probe, but connect directly through a 100Ω resistor as shown in the diagram below.

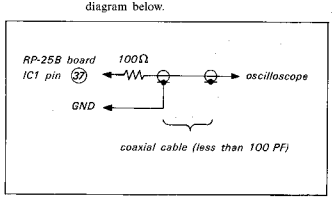


Fig. 5-29.

PCM connector: Nothing should be connected.
Connection: Connect the following two points with jumpers.
VI-9B board Q203 base (REC Y/C/AFM) — GND
RP-25B board CN2 Pin ⑤ (PCM REC) — CN1 Pin ② (REG 5V)
[Adjustment Procedure]
Adjust to 8 mVp-p with RP-25B board RV5.
Note: When there is a lot of noise, remove VI-9B board CN011 or SS-38C board CN111.

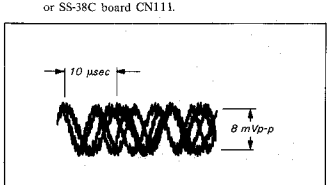


Fig. 5-30.

5-4. Audio System Adjustment

Use a colour bar signal as video signal input when performing adjustment.
Connection of Audio Adjustment Measuring Instruments
Connect the following audio measuring equipment in addition to the video measuring instruments.

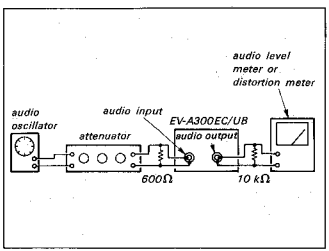


Fig. 5-31.

[Adjustment Order]

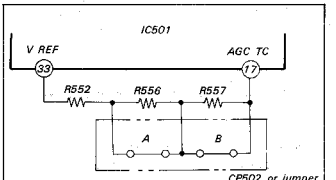
1) E-E Output Level Adjustment
2) AFM Carrier Frequency Adjustment
3) AFM Deviation Adjustment
4) AFM Carrier Level Adjustment
5) Overall Level Response Check
6) Overall Distortion Ratio Check
7) Overall S/N Check

* TA-29A Board . . . AEP model
TA-29B Board . . .UK model

5-4-1. E-E Output Level Adjustment (TA-29A/B Board)

Mode: E-E
Audio input signal: 400 Hz, −6.3 dBs
Check Procedure:
1) Check that AUDIO LINE OUT level is −6.3 ±1.5 dBs.
2) If not, perform the following adjustment.

[Adjustment Procedure]
1) Remove CP502.
2) Short A (R556) and B (R557).
3) Measure AUDIO LINE OUT level* and open A and/or B according to the tabl below.
   * Measure more than 30 seconds after POWER ON.



AUDIO LINE OUT LEVEL	A	B
more than −6.1 dBs	short	short
−6.1 −7.5 dBs	open	short
−7.5 −8.8 dBs	short	open
less than −8.8 dBs	open	open

Fig. 5-32.

5-4-2. AFM Carrier Frequency Adjustment (TA-29A/B Board)

Mode: RECORD (SP mode)
Audio input signal: no signal
Frequency counter: TP507 (CN501 Pin ①)
[Adjustment Procedure]
Adjust to 1.500 ±0.003 MHz with RV502.

5-4-3. AFM Deviation Adjustment (TA-29A/B Board)

Mode: Playback
Alignment tape: operation check (WR5-3CSP)
[Adjustment Procedure]
Adjust audio output level to −7.3 ±0.2 dBs with RV501.

5-4-4. AFM Carrier Level Adjustment (TA-29A/B Board)

Mode: RECORD (SP mode)
Audio input signal: no signal
Oscilloscope: TP507 (CN501 Pin ①)
[Adjustment Procedure]
Adjust to 120 ±5 mVp-p with RV503.

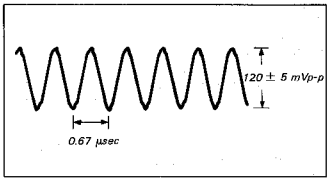


Fig. 5-33. AFM Carrier Level Adjustment

5-4-5. Overall Level Response Check

Mode: Self-recording and playback (LP mode)
Tape: MP type
Audio input signal: 400 Hz, −6.3 dBs
[Check Method]
1) Record.
2) Playback the recorded section.
3) Confirm that audio output level is −7.3 ±2.5 dBs.

5-4-6. Overall distortion ratio check

Mode: Self-recording and playback
Tape: MP type
Audio input singal: 400 Hz, −6.3 dBs
[Checking procedures]
1) Record.
2) Play back the recorded section.
3) (During the use of filter as shown in Fig. 5-34)
The distortion ratio should be less than 0.5% both for SP and LP modes.
(When filter is not used.)
The distortion ratio should be less than 1.0% both for SP and LP modes.

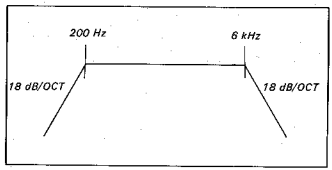


Fig. 5-34. Distortion Ratio Measurement Filter

5-4-7. Overall Distortion Ratio Check

Mode: Self-recording and playback.
Tape: MP type
Audio input signal: 400 Hz, −6.3 dBs and no signal
[Check Method]
1) Record a 400 Hz, −6.3 dBs signal.
2) Record in no signal state (short AUDIO LINE IN pin).
3) Playback the recorded sections and check that the level difference in both SP and LP modes between the signal (400 Hz section) and noise (no signal section) is more than 60 dB*.
* When using an A curve acoustic filter.
(When not using the filter, it should be more than 57 dBs in both SP and LP modes.)

5-5. Tuner Section

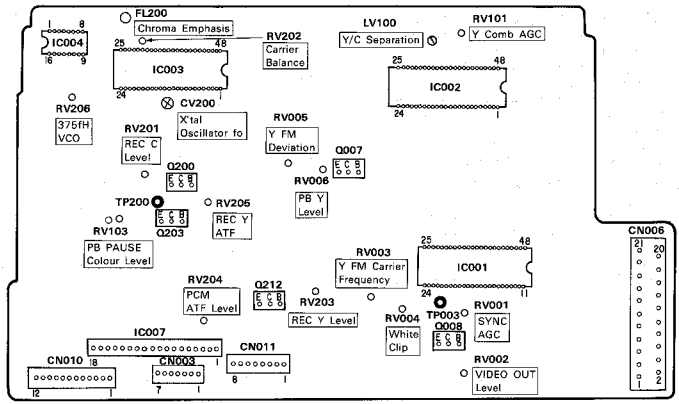
5-5-1. TU AGC Adjustment (TA-29A/B Board)

1) Receive broadcast TV signals in the highest contrast.
2) Turn RV1 clockwise until snow (intensity-modulated display) noise appears on the TV screen.
3) Slowly turn RV1 counterclockwise until the snow (intensity-modulated display) noise disappears.
4) Receive signals of all channels in turn, and ensure that there is no cross modulation beat, image deformation or snow noise effect.

5-5-2. AFT Adjustment (TA-29A/B Board)

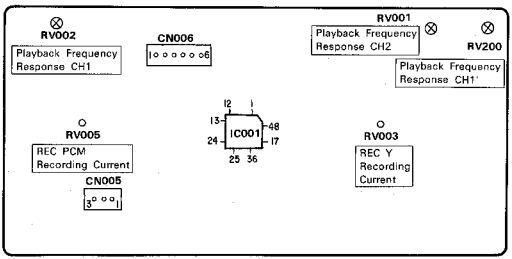
1) Receive broadcast TV signals.
2) Turn off the AFT switch.
3) Press the tuning button and set for the optimum state while observing the monitor TV screen. (There should be no beat).
4) Turn on the AFT switch.
5) Adjust L8 to make sure that there is no beat or picture disturbance.

VI-9B BOARD (SOLDER SIDE)

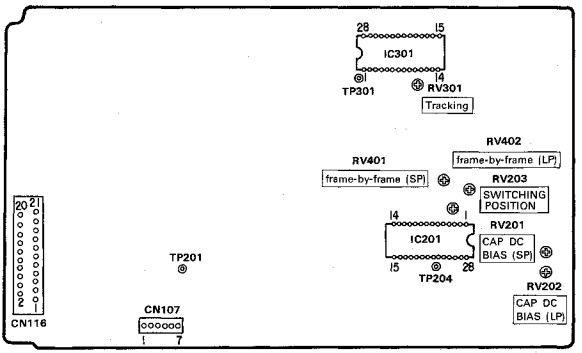


CV200, FL200 and LV100 can only be adjusted from the component side

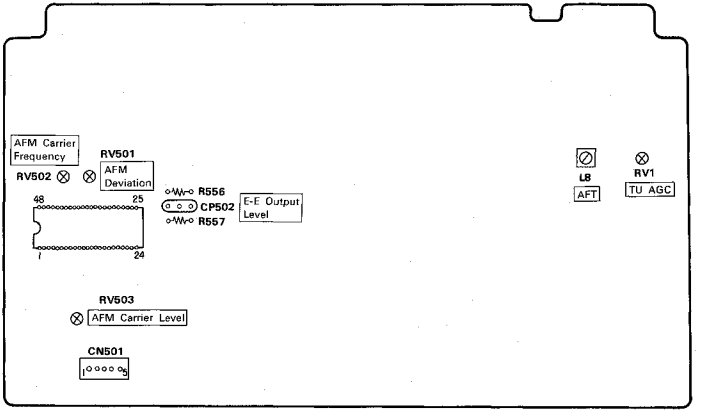
RP-25B BOARD (SOLDER SIDE)



SS-38C BOARD (CONPONENT SIDE)

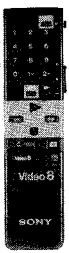


TA-29A/B BOARD (CONPONENT SIDE) ***TA-29A Board . . . AEP model**
TA-29B Board . . . UK model



RMT-409

SERVICE MANUAL



SPECIFICATIONS

Remote Commander RMT-409

Remoto control system	Infrared control
Power requirements	3 V dc, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 45 × 20 × 175 mm (w/h/d) (1¾ × ¾ × 7 inches) incl. projection parts and controls
Weight	Approx. 66 g (2.3 oz) not including batteries

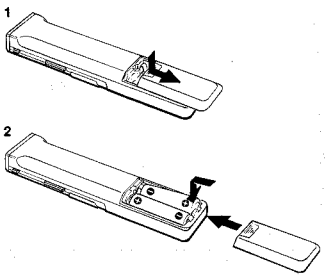
REMOTE COMMANDER

SONY

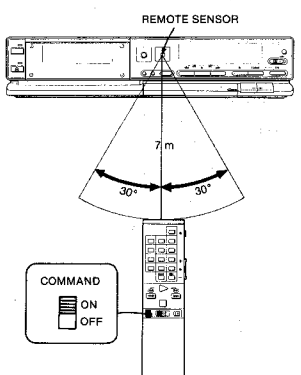
ACC

1. REMOTE COMMANDER SET-UP

F-1



F-2



You can control almost all the functions of the video cassette recorder remotely using the supplied Remote Commander.

Battery insertion F-1

1 Open the lid.
2 Insert two IEC designation R6 batteries with correct polarity and close the lid firmly.

Battery life

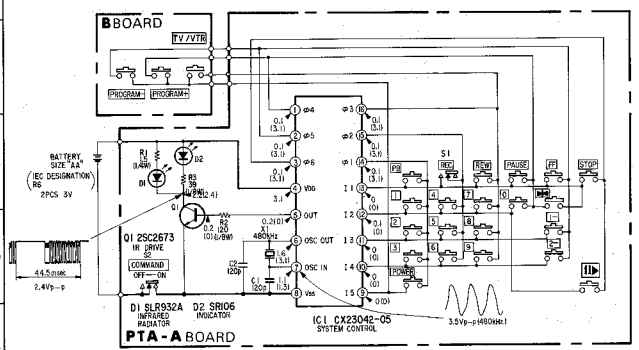
In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Notes

- There should be no obstacles between the Commander and the REMOTE SENSOR.
- Operable range is limited. F-2
  Distance: Approx. 7 meters (23 feet) from the REMOTE SENSOR
  Angle: Approx. ±30 degrees from the centre.
  The shorter the distance between the Commander and the recorder, the wider the angle within which the recorder can be controlled.
- Set the COMMAND switch to ON to operate the Commander.
  Set to OFF when the Commander is not in use.

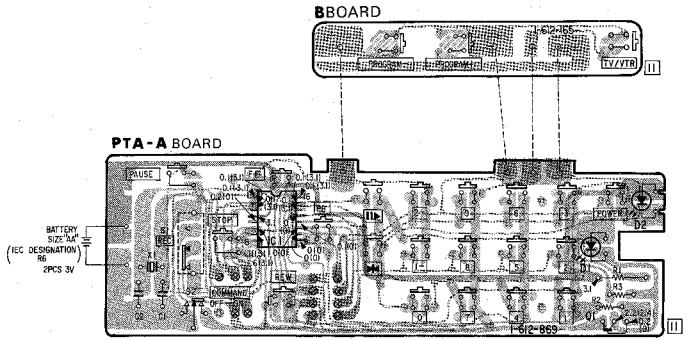
2. SCHEMATIC DIAGRAMS



Note:

- All resistors are in ohms.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- ▭: panel designation.
- ——: B+ bus.
- Voltages and waveform are for when [1] button is pressed.
- Voltages in ( ) are taken with button not pressed.
- The voltage value is measured using a digital tester (10MΩ).

3. PRINTED WIRING BORADS

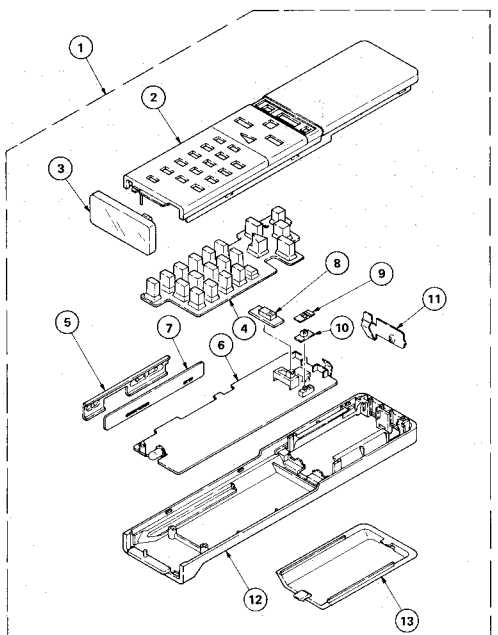


4. EXPLODED VIEW

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



No.	Part No.	Description	Remark
1	A-6765-725-A	COMMANDER ASSY RMT-409	2-13
2	2-389-328-21	CASE (UPPER), COMMANDER	
3	2-387-107-01	PANEL, COMMANDER (FRONT)	
4	2-389-337-01	RUBBER (A), CONTACT	
5	2-389-303-01	RUBBER (B), CONTACT	
6	*1-612-869-11	PTA-A BOARD	
7	*1-613-635-11	B BOARD	
8	2-387-101-01	BUTTON, RECORDING	
9	2-387-113-11	PLATE, COLOR	
10	2-383-127-01	BUTTON, SLIDE	
11	4-350-925-00	TERMINAL (C), BATTERY	
12	2-387-110-11	CASE (LOWER), COMMANDER	
13	2-387-105-11	COVER, BATTERY	

5. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

COILS
- MMH : mH, UH : μH

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
	*1-612-869-11	PTA-A BOARD **********			
	2-387-103-01	TERMINAL (A), BATTERY			
	2-387-104-01	TERMINAL (B), BATTERY			
		CAPACITOR			
C001	1-102-107-00	CERAMIC	120PF	10% 50V	
C002	1-102-107-00	CERAMIC	120PF	10% 50V	
		DIODE			
D1	8-719-912-39	DIODE SLR-932A			
D2	8-719-100-06	DIODE SR106C			
		IC			
IC1	8-759-916-10	IC CX23042-06			
		TRANSISTOR			
Q001	8-729-967-32	TRANSISTOR 2SC2673			
		CAPACITOR			
R1	1-247-073-00	CARBON	1.5	5% 1/4W	
R2	1-247-809-00	CARBON	120	5% 1/8W	
R3	1-247-797-00	CARBON	39	5% 1/8W	
		SWITCH			
S1	1-554-364-00	SWITCH, SLIDE			
S2	1-553-977-00	SWITCH, SLIDE			
		CRYSTAL			
X1	1-527-476-00	OSCILLATOR, CERAMIC			
**********					
	*1-613-635-00	B BOARD ********			
**********					